

FIRE AUSTRALIA

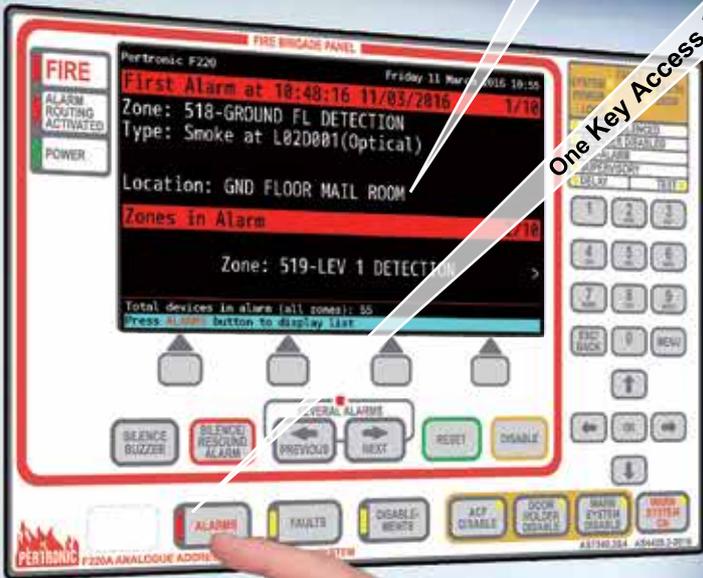
MANAGING ANIMALS IN EMERGENCIES

**Next steps for
NSW reforms**

**Testing the capability
to predict bushfires**

**National research
priorities**

PERTRONIC F220 Fire Alarm Panel



Identifies
Exact
Location of
Alarm

One Key Access to Alarm List View

| Pertronic F220 | | Friday 11 March 2016 18:57 | |
|----------------|------|----------------------------|-------------|
| 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 (L020071)

Time: 18:48:21, 11 March 2016

Total zones in alarm: 18

Page up Page Down F81 Page

Vital Information during Critical Incidents

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PRIORITIES FOR THE FUTURE

RICHARD THORNTON

Chief Executive Officer,
Bushfire and Natural
Hazards CRC



As a nation, we have a moral and economic obligation to mitigate the impact of natural hazards.

This is why we sat down with Australian emergency management leaders to determine the most significant natural hazard issues our country faces, and to draw up research priorities for the next decade to meet these needs.

This is the first time such a future-thinking exercise has been undertaken on natural hazards research in Australia—but with the annual economic costs of disasters in Australia expected to increase from \$9 bn to \$33 bn by 2050, it was vital.

The priorities are based around four key themes, covering shared responsibility and community engagement, communicating risk, understanding the benefits of mitigation, climate change and predicting hazards more accurately, which leads to better warnings. It is important to note that the publication of the priorities is the beginning of a process, not an end. When new themes are identified in coming years they will be added. You can find out more about the natural research priorities for emergency management in this issue (page 38).

There is plenty to discover in this issue of *Fire Australia*. Our cover article describes important research into how to best include pets in an emergency management plan (page 22), while the much-anticipated Southern Australia Seasonal Bushfire Outlook is covered on page 30.

You can also read about the July Coolaroo recycling fire in Melbourne's northern suburbs (page 16), find out what happened at the AFAC17 powered by INTERSCHUTZ conference (page 24), and take note of the lessons from the Grenfell building fire in London (page 28).

This issue also contains an assessment of bushfire spread simulators (page 34), and a case study on how major research insights from Black Saturday have been distilled into practical industry community safety guidelines (page 42).

At the Bushfire and Natural Hazards CRC, we are all about making practical use of research. We want our research to inform the business of our partners, leading to safer communities all over Australia. We are on the right path and tracking well, but there is still a lot of hard work to do.

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FIRE AUSTRALIA



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OUR COVER

Two out of three Australian homes have a pet, but our pets are one of the most overlooked parts of preparing for an emergency. Research has investigated how pets like mini fox terrier cross Giddy can easily be incorporated into emergency plans.

PHOTO: JENNY BIGELOW

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: tom.bicknell@fpaa.com.au. For more details on submitting a contribution, please contact the editors.

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AUSTRALIAN FIREFIGHTERS DEPLOYED TO CANADA



PHOTO: NSW RURAL FIRE SERVICE

Australia has made its most significant deployment of firefighting personnel to Canada, with more than 220 people travelling to the Canadian province of British Columbia.

The first contingent of 53 Australians were deployed in mid-July after a state of emergency was declared. Additional deployments were made in late July and again in late August to provide relief and support to crews.

The request for assistance was received through the National Resource Sharing Centre (NRSC), maintained by AFAC. Australian states and territories worked with the NRSC to deploy teams of highly skilled fire specialists, incident management team personnel and aviation specialists.

This request was made possible by an ongoing mutual fire management arrangement between Australia and Canada. The agreement between the NRSC (based in Melbourne) and the Canadian Interagency Forest Fire Centre

(based in Winnipeg, Canada) allows for the exchange of personnel, resources and technology.

"How this deployment happened is no accident," said AFAC CEO Stuart Ellis. "This is the 17th deployment across the Pacific between North America and Australia. This nationally coordinated Canadian deployment extended over three months and realised a vision first identified in 2002 when the National Aerial Firefighting Centre was initially conceived—that Australia should have a national body to manage resource sharing, including aviation."

The NRSC was established in 2016 to develop and maintain the national Arrangement for Interstate Assistance and support collaboration with international jurisdictions. While the NRSC coordinated the national efforts, resources from across Australia were clustered through two hubs: Emergency Management Victoria put together a team from Victoria, Tasmania, SA and WA, while NSW Rural Fire Service

arranged personnel from NSW, ACT, Queensland and the NT.

The Canadian fire management agreement complements a similar agreement through the NRSC between Australia and the US. This is the first time that both agreements have been elevated to a national level; previously, Australian states and territories were required to be parties to the agreement. With the transition to national-level agreements, and the support of the NRSC, sharing resources and knowledge with Canada and the US has become far less complex. ■

In July 2017, an Australian contingent of 53 specialist personnel were deployed to Canada to help fight wildfires in British Columbia.

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PRESTIGIOUS AWARD FOR BUSHFIRE RESEARCHER

Researcher Dr Marta Yebra with respected Australian ecologist and entomologist Dr Max Day.

An inaugural award recognising scientific achievements has been presented to Bushfire and Natural Hazards CRC researcher Dr Marta Yebra.

Dr Yebra and co-recipient, Nick Leseberg from the University of Queensland, received their awards at the annual Australian Academy of Science event, Science at the Shine Dome, held last May.

Dr Yebra received her award in recognition of her CRC research mapping bushfire hazards and impacts, which is conducted through the Australian National University. She is developing methods to produce spatial information on fire hazards—information that is much needed by planners, land managers and emergency services.

The Max Day Award recipients each received a \$20,000 grant toward their research. Dr Yebra will use the funding to conduct experiments at the National Arboretum Canberra to determine the moisture content of Australia's native forests. Moisture content is particularly important to predicting bushfires on a large scale, because it affects the likelihood of ignition occurring, as well as the severity and spread of the fire. This real-world data will be incorporated into new models that can be used to predict bushfires.

"I can't express how much the Max Day Environmental Science Fellowship Award means to me," Dr Yebra said.

"This acknowledgement is something that I will cherish for all my life. It opens new doors for me to achieve that



personal and professional motivation by contributing to the cost to collect an essential dataset as an important step towards comprehensive fire risk monitoring in Australia. I feel honoured and excited on receiving this award, which signifies the importance that Australia places on the bushfire research I do," she added.

The Max Day Environmental Science Fellowship Award was established in honour of Dr Max Day, whose commitment to science goes back 74 years. At 101 years old, Dr Day is the longest serving fellow of the Australian Academy of Science. ■

NEW FPAS ACCREDITATION CLASSES ANNOUNCED

Three new classes of accreditation are in development for the Fire Protection Accreditation Scheme (FPAS): Fire Safety Assessor, Fire Systems Installation and Fire Systems Maintenance. Fire Safety Assessor is tailored to fit new NSW requirements for professionals preparing annual fire safety statements, but will also be applicable nationally.

Under recently announced reforms (see pages 36–37), the NSW Government aims to recognise industry accreditation schemes that meet their requirements for competent fire safety practitioners. The Fire Safety Assessor class is intended to fill those requirements.

The Fire Systems Installation accreditation class will cover the installation and commissioning of fire protection systems, while Fire Systems Maintenance will cover alteration, repair and rectification of these systems.

Both accreditation classes will initially have two categories:

- ◆ Fire Sprinkler Systems
- ◆ Fire Hydrant and Hose Reel Systems.

To be eligible for these two categories in either class, applicants require a Certificate III in Fire Protection or equivalent.

The categories will be further expanded in the near future to also include:

- ◆ Fire Detection and Alarm Systems
- ◆ Passive Systems.

Expressions of interest for these classes are now open through Fire Protection Association Australia. ■

BASIC HOME FIRE SAFETY TRAINING MATERIALS UPDATED

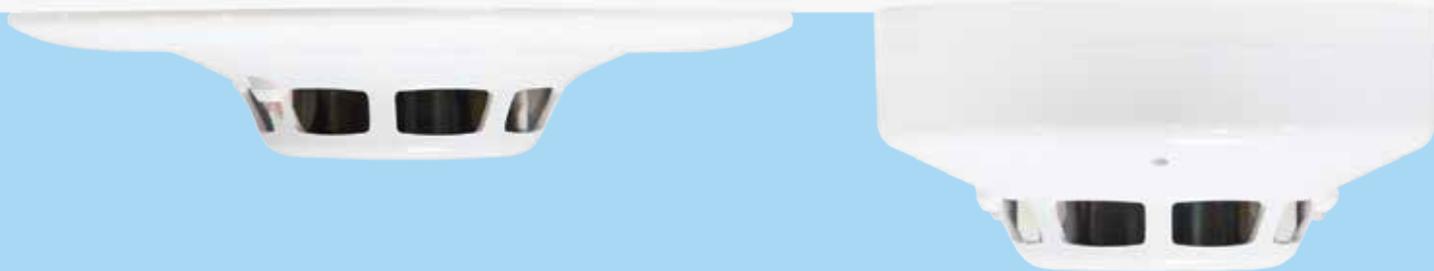
The *Basic Home Fire Safety Training Materials*, developed by fire and emergency services from across Australia, have recently been updated and are available from the AFAC website.

The training materials support the development of skills and competencies for those involved in community service work. The resources support the knowledge evidence assessment requirements for units of competency in the Community Services (CHC) and Health (HLT) training packages.

In addition to their use for formal training qualifications delivered by registered training organisations, Australian fire services recommend that community care agencies use the training materials as part of inducting new workers and maintaining the skills of existing workers. ■

Find a full list of competencies and qualifications, including fire safety, and download Version 2 of the training materials for free at: www.afac.com.au/initiative/bhfs.





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SCIENCE BENEFITS HIGHLIGHTED

Emergency managers and policymakers from across Australia gathered in Adelaide on 4–5 July to discuss how national research by the Bushfire and Natural Hazards CRC is making communities safer. Research Driving Change – Showcase 2017 highlighted the practical research outcomes of the last four years of research, with case studies and utilisation examples from across the CRC’s research program presented by its partners.

CEO of the Bushfire and Natural Hazards CRC, Dr Richard Thornton, said the attendance of 190 people showed how much science is valued by those who are improving the way Australia prepares for and responds to natural hazard emergencies.

“We are now seeing outcomes of the national research program being taken up by our partners, and others, across the broader emergency management sector,” Dr Thornton said.

The showcase featured case studies of how the emergency management industry is using the results of CRC research. The sessions highlighted how these findings are being put into practice across the sector, with end users also speaking about how to best direct research, and how to more easily absorb research findings into operations and policy.

Topics covered included volunteering, disaster policy, bushfire and severe weather modelling, emergency warnings



PHOTO: DAVID BRUCE, BUSHFIRE AND NATURAL HAZARDS CRC

As part of the Research Driving Change showcase, Adam Leavesley from the ACT Parks and Wildlife Service explains how CRC research is making prescribed burning safer.

and risk communication, teamwork in high-pressure situations, the economics of mitigation, engineering and the built environment, and supporting Indigenous communities in northern Australia.

A series of panels featuring industry leaders shared their insights on how CRC research is influencing their business, how to obtain the best value from investment in research, and where science will lead emergency management in Australia next.

Importantly, the next stage of the science was also discussed. New projects point to exciting new directions in catastrophic event planning, land-use planning, flood risk communication,

predicting impacts on the built environment along the coast, diversity and well-being in emergency services, and mental health. This new research will build upon the work completed in recent years. All presentations and videos from the event are available online.

The showcase began with the launch of the priorities for national research into natural hazards for the next decade. The national research priorities for natural hazards emergency management, developed in conjunction with the emergency management sector, identify where future investment is needed. Find out more about the priorities on pages 38–39.

BUILDING LEADERSHIP CAPABILITY

The AFAC *Leadership Capability Framework* (LCF) has been refreshed and is now available from the AFAC shop.

The 2017 LCF builds on the original doctrine released in 2007. The process to update it was led by AFAC’s Workforce Management Group, and was supported by AFAC member agencies.

The framework spans four organisational levels: team member, team leader, manager and executive. The titles given to each of these levels will vary from organisation to organisation according to job roles or ranks; several roles may even be subsumed within each of the four levels. Structuring the LCF in this way helps to clearly explain the changing leadership requirements between the different levels of leadership.

The LCF, which has been purposely

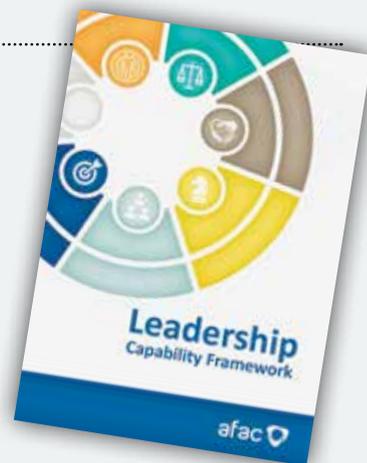
designed at the broader organisational level, is relevant to personnel working across the various functions and operational areas of an agency. For example, some personnel will work in highly time-critical and dynamic areas (e.g. operations), while others will work in areas that are generally less time-sensitive and more predictable (e.g. training).

Organisations can use the framework as a starting point when developing the leadership capability of their workforce. It can be applied flexibly to a wide range of organisations, regardless of the specific structure or core business.

The LCF has been developed to support varied and flexible application. It can supplement other capability frameworks where the need arises, or be used as a standalone tool to assist in activities such as talent identification, succession planning, setting goals

for coaching and mentoring, or tailoring professional development opportunities.

While many agencies are working with existing public sector capability frameworks, the AFAC LCF remains relevant as an industry-led framework and can be used in many ways to complement the frameworks already in use within agencies. ■





BY THE FIRE INDUSTRY, FOR THE FIRE INDUSTRY

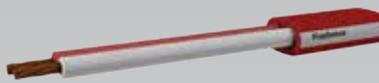
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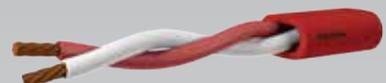
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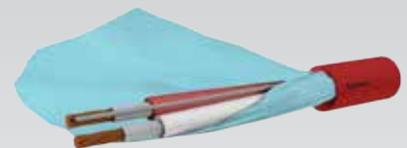
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REVISION TO SPRINKLER STANDARD RELEASED

A new revision of sprinkler standard AS 2118.1 released in early September includes significant changes from the previous version. The Australian Building Codes Board (ABCB) aims to adopt the revision as part of the out-of-cycle National Construction Code (NCC) amendment to be published in March 2018.

This standard, and its proposed adoption in the NCC amendment, represents a significant improvement to the design and installation of sprinkler systems in Australia. It's the result of several years of work by Fire Protection Association Australia (FPA Australia) representatives and many other industry stakeholders on Standards Australia committee FP-004. FPA Australia would like to thank all FP-004 members (especially our representatives) for their efforts to both develop this revision and ensure it is suitable for NCC adoption.

Key changes in the revision include:

- ◆ incorporation of amendments from the 2006 edition, such as
 - ◆ removed 'grades' of water supply and replaced with single or dual supply
 - ◆ added a section on Commissioning and Acceptance Testing (now an appendix in AS 2118.1:2017 due to ABCB's protocol for NCC referenced documents)
 - ◆ graphic representation of hydraulic characteristics and worked examples (Appendix E)
- ◆ significant changes to exposure protection in Section 3 and protection of concealed spaces in Section 5
- ◆ a complete rewrite of the Light Hazard class systems section (Section 9) for ease of use and based on updated information



- ◆ new Sections 11, 12 and 13 for High Hazard (includes key design, installation, operation and performance requirements from FM Global datasheets within the standard itself to ensure AS 2118.1 meets the ABCB's protocols for NCC referenced documents)
- ◆ an expanded definitions clause
- ◆ inclusion of informative text for occupancy classification (Appendix A).

FPA Australia ran a seminar series in late September and early October to inform members and the public of the detail of the changes in this new edition of AS 2118.1. The seminars included presentations from representatives of the FP-004 committee and attracted several hundred attendees. ■

DISASTERS LOOM, BUT CALM COLLABORATIONS CAN BOLSTER GLOBAL AGENCIES

A Bushfire and Natural Hazards CRC academic is part of a global network dedicated to ensuring concerted approaches among agencies focused on reducing disaster risk.

Professor Kevin Ronan's research focus is on preparing children and schools. But he's also part of a wider push to ensure adequate research, a shared agenda and transferable tools to underpin how worldwide agencies design, develop, evaluate and implement their programs.

Locally, the network ensures that kids have the learning and abilities to reduce risks and improve disaster resilience, including at home and at school. Globally, it is supporting multi-agency collaborations to implement the principles behind the Sendai Framework for Disaster Risk Reduction (2015–2030).



Professor Kevin Ronan at the Global Platform for Disaster Risk Reduction conference in Cancun, Mexico.

Global agencies that are part of the Sendai Framework redoubled their efforts in May during a Global Platform for Disaster Risk Reduction event in Cancun, Mexico. Professor Ronan represented CQUniversity and the Bushfire and Natural Hazards CRC in Cancun, while also co-presenting and facilitating a researcher–practitioner meeting.

He gave a simple example why it's important for children to be involved in planning for emergencies.

"Most people have heard about the 'duck, cover and hold' drill for earthquake zones. However, there have been cases recently in Nepal where kids who were safely outside ran into buildings which were shaking to seek out something to duck under, putting them at more risk."

"One of the things that we feel needs to come in advance of key messaging is building in a set of skills that help kids learn not just what to do, but also how to do it and why they are doing it." ■

AFAC ADVOCATES FOR NATIONAL BUILDING FIRE SAFETY MEASURES

AFAC represented its members at a public hearing in Sydney for the Senate Economics References Committee Inquiry into the effects of non-conforming building products on the Australian building and construction industry.

The tragic Grenfell Tower fire in London has served as a reminder to Australian fire services of the threat of structure fires to the community. The inquiry has been ongoing since 2015 following the 2014 Lacrosse apartment fire in Docklands, Melbourne, with public hearings held in Adelaide, Sydney and Melbourne.

AFAC's submission, provided by Amanda Leck, Director of Information and Community Safety, advocates for better clarity, consistency and simplification across all Australian states and territories in the application of clauses in the National Construction Code.

"AFAC remains deeply concerned that there are many high-rise buildings around the world that have flammable materials installed with the potential for external fire spread," said Ms Leck.

"Australian fire authorities have an expectation that new buildings are constructed in accordance with the National Construction Code, and [that]

developers, architects, builders, building surveyors, fire engineers and others involved all check and certify that construction meets the required standards. These processes are in place to protect the health and safety of building occupants and firefighters who may be required to enter burning buildings and search for occupants during fire events."

AFAC has conducted several meetings with the Australian Building Codes Board and Fire Protection Association Australia to progress fire safety measures and seek a way forward to balance the need for new developments to have effective fire protection with the increasing costs to builders and developers.

"We have also identified a need to formalise building commissioning practices on a national basis to ensure the building functions correctly and all the fire and life safety systems function as designed. Once commissioned, these systems need to be maintained. Currently this is to state and territory requirements; however, AFAC recommends a national maintenance regime be mandated," added Ms Leck.

AFAC will continue to advocate for better regulatory controls in key areas to improve building safety outcomes for the community and for the firefighters who are required to enter burning buildings. ■



The aftermath of Melbourne's Lacrosse apartment fire demonstrates the importance of national building fire safety measures.

NEW NSW HEADQUARTERS AND STATE MANAGER FOR FPA AUSTRALIA

Fire Protection Association Australia (FPA Australia) is establishing a NSW state headquarters in Sydney's inner suburbs in October in response to the state's unprecedented growth in membership.

The state headquarters will be led by a new state manager, who will be responsible for overall operations of FPA Australia's activities in NSW. Further appointments for the NSW headquarters are expected to follow.

"Our new NSW headquarters and state manager will have a significant focus on engagement with NSW members, government and other key stakeholders," said FPA Australia CEO Scott Williams.

"They will also help strengthen our accreditation frameworks, and support all the Association's activities to deliver better fire safety outcomes for the community."

NSW has the largest FPA Australia membership of any state and territory, and growth in recent years has been significant. The new state headquarters will help support those members and complement the Association's current training centre in Mascot, which opened in September last year.

Beyond the expansion in NSW, FPA Australia is also working towards putting in place additional resources in Queensland in the near future. As another key growth state, the Association is currently exploring options to better serve Queensland members with a regional presence. ■

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THE EVOLUTION OF INCIDENT MANAGEMENT IN AUSTRALIA

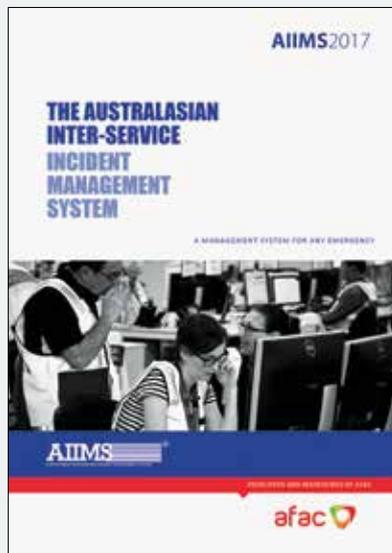
The Australasian Inter-service Incident Management System (AIIMS) is an integral part of emergency management doctrine for the fire and emergency services industry within Australia.

The system has enabled Australian agencies to come together to resolve incidents through an integrated and effective response. Through applying AIIMS in training, exercising and incident response, people from fire and emergency services, government, not-for-profit agencies and industry have built trust and confidence in each other's ability to work together and effectively manage the most challenging of incidents.

AIIMS 2017

The 2017 version of the AIIMS manual (*AIIMS 2017*) is now available in the AFAC shop. AFAC has updated the incident management doctrine to reflect the continuing experience and learning gained since AIIMS was first introduced.

AIIMS 2017 captures many insights, both from formal research findings and



The *AIIMS 2017* manual captures many insights from research, reviews and inquiries.

guidance provided by recent reviews and inquiries into incident management. This includes the rapidly growing body of research on incident management and the impact that human psychology

and social behaviour has on teams managing emergency incidents.

The 2017 manual has been developed following an extensive review of AIIMS doctrine undertaken in 2015, building on the work that produced the 2013 edition of AIIMS-4.

The production of *AIIMS 2017* is the latest step in the evolution of incident management in Australia and will certainly not be the last. Our understanding of what makes a team effective, and what tools can support teams to manage incidents, continues to develop. AIIMS will be refined regularly to reflect that growing understanding. The custodians of AIIMS—the AIIMS Steering Group—will continue to capture the experience of AIIMS practitioners and insights from research to ensure the system provides the support needed by agencies and incident managers to undertake this challenging task. ■

You can purchase *AIIMS 2017* from the AFAC shop: www.afac.com.au/shop.

FPA AUSTRALIA LAUNCHES NEW REGISTER FOR NSW REFORMS

Fire Protection Association Australia (FPA Australia) launched a new register of fire protection practitioners in early October to connect building owners and industry looking for assistance in preparing annual or supplementary Fire Safety Statements with FPA Australia Corporate members who do this work.

The new Interim Fire Safety Assessor Register is a response to the New South Wales building reforms (see page 36), which primarily cover fire safety and came into effect on 1 October. The reforms require some types of fire protection work in NSW to be conducted by a 'competent fire safety practitioner' (CFSP), in particular the assessment of essential fire-safety measure performance for the purposes of annual and supplementary Fire Safety Statements.

Prior to an accreditation scheme for CFSPs being recognised by the NSW Government, building owners are required to satisfy themselves that practitioners conducting this work are competent. More information on the reforms is available on the FPA Australia website (www.fpaa.com.au/fpas/nsw-reforms-frequently-asked-questions.aspx).

The register lists practitioners that conduct this work and have met FPA Australia's minimum requirements for experience, insurance, professional conduct and commitment to future accreditation under the Fire Protection Accreditation Scheme (FPAS). It serves as an interim tool for building owners and industry seeking competent fire safety practitioners. FPA Australia recommends that building owners in New South Wales use individuals listed on the register to assess essential fire-safety measure performance for the purpose of annual or supplementary Fire Safety Statements.

Companies and individual practitioners listed on the register have demonstrated/declared to FPA Australia that:

- ◆ the individual listed is employed by an FPA Australia Corporate member

and has a minimum of three years' experience in undertaking inspections/assessments for the purpose of completing Annual and Supplementary Fire Safety Statements

- ◆ the individual listed is covered by Public and Product Liability Insurance (\$10m minimum) and Professional Indemnity Insurance (\$2m minimum)
- ◆ they have read and agreed to abide by the FPA Australia Code of Practice for companies, and Code of Professional Conduct for individuals
- ◆ they have committed to undertake all assessment of essential fire safety measures in accordance with the relevant regulations, Codes and Australian Standards
- ◆ they hold or have access to current and historical Standards and Codes for the essential fire safety measures that they assess
- ◆ that they are committed to applying for accreditation in the FPAS Fire Safety Assessor class within 90 days of it becoming available.

The register is available at: connect.fpaa.com.au/FireSafetyAssessor.

RESEARCHER SELECTED FOR ANTARCTIC EXPEDITION

Bushfire and Natural Hazards CRC project leader Dr Veronique Florec is one of 80 scientists selected to join an all-female international expedition to Antarctica in February and March 2018.

The expedition is part of the Homeward Bound program, which aims to heighten the impact of women with a science background to influence policy and decision-making. Of the 80 participants, 35 are Australian.

Dr Florec leads the CRC's Economics of natural hazards project. This research applies economic analysis to the management of natural hazards, such as bushfires and floods, to help decision-makers obtain better value for money from public investments in hazard mitigation.

"This will be the perfect environment for us to focus on self-observation and deep learning," Dr Florec said. "Living on a ship with 70 other women in close proximity will be pretty intense, but it will be exciting to meet so many people from all around the world and improve our leadership skills."

"With the skills we'll learn from the program, we'll have more clarity, confidence and strategic capability to influence policy and decision-making as they shape the future of our planet."

Homeward Bound envisions a geographically, ethnically and scientifically diverse group of women engaging in a philanthropically funded, year-long program to develop their leadership and strategic capabilities using science. ■

Dr Veronique Florec (far left) is making the trip to Antarctica with fellow West Australians [L-R] Jessica Brainard (Western Australia Museum), Rachel Zombor (WA Department of Health), Anais Pages and Valerie Sage (CSIRO).



A close-up photograph of a man's face, smiling broadly. He is wearing a dark, heavy winter hat with a fur-like lining and has a significant amount of snow or frost on his hat and beard. The background is a solid, vibrant green.

How does Finn protect a cold store against fire?

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EXPERTS APPOINTED TO EXAMINE COMPLIANCE AND ENFORCEMENT

The Building Ministers' Forum (BMF) announced in late August the appointment of two experts to lead an examination into compliance and enforcement problems in the Australian construction sector.

Professor Peter Shergold AC and Bronwyn Weir will assess issues affecting the implementation of the National Construction Code.

Prof Shergold is the Chancellor of the University of Western Sydney. In 2014, he led an independent review of government processes for the development and implementation of large public programs and projects. Ms Weir is a partner at Maddocks law firm and a legal expert in building and construction.

"This is a very encouraging move to address the compliance and enforcement problems in the Australian building industry," said Fire Protection Association Australia CEO Scott Williams.

"As a nation we have invested heavily into nationally consistent standards, codes and education, but we still have non-compliant building outcomes. Compliance is one of the biggest challenges the industry faces.

"The Association continues to advocate that products, people and enforcement are the three essential pillars needed to achieve quality outcomes in fire protection. Ms Weir and Professor Shergold's work will be a significant step towards helping understand the challenges the industry faces and making necessary recommendations that will lead to better quality and more compliant buildings outcomes, and we look forward to supporting them."

The BMF flagged its intention to appoint experts to develop a report on the issue at a meeting in late June. The decision came in response to concerns raised by the Grenfell fire in London. ■



Professor Peter Shergold



Bronwyn Weir

NEW MITIGATION RESEARCH IN WESTERN AUSTRALIA

A new study of natural hazard risk aims to develop a decision-support system for WA.



PHOTO: NATHAN MADDOCK, BUSHFIRE AND NATURAL HAZARDS CRC

A new case study of bushfire, earthquake and coastal inundation will take place in Western Australia thanks to funding through the Federal Government's Natural Disaster Resilience Program.

Announced in June, the Office of Bushfire Risk Management WA has received the funding to work with the Decision support system for optimal natural hazard mitigation project.

The research will build on the recently completed case study for Adelaide and ongoing case studies in Melbourne and Tasmania. The case study will develop a decision-support system for WA, focusing on the south-west: from Gingin south to Augusta–Margaret River, and east to Boyup Brook. The Perth metropolitan area will also be included.

Using a framework for assessing policy and planning investment options, the research will help Western Australian emergency managers and local governments think through the costs and consequences of different options for mitigating natural hazards. Emergency managers will be able to assess how such disasters might affect their infrastructure and natural environments, and predict how these might change into the future. Training and utilisation pathways will also be developed to help end users such as the Office of Bushfire Risk Management apply the decision-support system. ■

A HUB FOR HAZARDS RESEARCH

The new-look Disaster Resilience Knowledge Hub from the Australian Institute for Disaster Resilience will feature a selection of key Bushfire and Natural Hazards CRC research.

The Knowledge Hub is a valuable source of information for emergency service response agencies, businesses, volunteers and everyday Australians seeking disaster resilience knowledge and resources.

The Hub features case studies from former Bushfire CRC research, key outcomes from current CRC research, handbooks and manuals, and the Emergency Management Library.

The website has been designed to be regularly updated with relevant information. Additional resources will be added as they are made available, including guest collections from emergency service agencies and relevant national and international organisations.

Users of the Hub can also contribute

their own disaster and emergency knowledge and resources through links on the website.

The Knowledge Hub has been developed to assist and support communities in preparing for, responding to and recovering from natural disasters. It builds on the concept previously developed under the former Australian Emergency Management Institute. ■

Visit the Knowledge Hub at: knowledge.aidr.org.au.

NEW REGISTRATION FOR INSPECT-AND-TEST WORKERS IN SOUTH AUSTRALIA

South Australia has introduced a new restricted registration category for workers who inspect and test fire suppression

systems. The new category aims to reduce the regulatory requirements for inspect-and-test work by removing the requirement for a full plumbing qualification.

The new registration covers inspect-and-test work specified under AS1851, and will allow workers to conduct monthly and six-monthly inspect-and-test activities for fire suppression systems as specified under the standard. It does not cover annual or greater testing, or installation and repair work.

The requirements will come into effect at the end of January 2018. Following that date, all inspect-and-test workers in the state will need to have the new registration.

"The Association is delighted with the outcome, which is an appropriate alignment of the work activity with the necessary levels of formal training," said Fire Protection Association Australia CEO Scott Williams.

"The new registration will maintain a high level of fire safety, while reducing the unnecessary cost burden on property owners."

Under the new category, workers need to have completed eight units of competency from the CPP20511 Certificate II in Fire Protection Inspection and Testing. ■



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MULTI-AGENCY RESPONSE TO THE COOLAROO FIRE



Firefighters are operating in an increasingly complex and changing environment. Recycling practices have been on the rise in Australia, and resulting pressures on waste management infrastructure have increased the risk of large-scale fire incidents.

MFB and other brigade appliances work together to fight the blaze at Coolaroo.

BY **GREG LEACH**

MFB Acting Chief Officer

In July this year, Melbourne's Metropolitan Fire Brigade (MFB) responded to a colossal, eighth-alarm fire at the SKM Recycling plant at Coolaroo in Melbourne's northern suburbs. A pile of recyclable material—approximately 100 m long, 80 m wide and 10 m deep—caught fire shortly before 9.00 am on Thursday 13 July. Strong winds caused the blaze to spread, quickly resulting in a deep-seated fire that eventually burned for 11 days.

Following a sighting of large smoke clouds while en route to the site, the initial responding MFB crew requested additional appliances and support. The call was progressively upgraded to an eighth alarm. MFB crews promptly evacuated civilians from the vicinity, and further evacuated businesses and homes in the surrounding area as a

result of the smoke and particulate plume.

Almost 140 MFB and Country Fire Authority (CFA) personnel, along with 50 appliances, were deployed. Responders worked around the clock to control the large and complex blaze.

The incident presented a number of challenges. In addition to strong winds and difficult site access, efforts to suppress the fire were further complicated by a limited reticulated water supply. Once initial responders assessed the sheer scale and complexity of the job, MFB activated an on-site incident management team. The District Command Centre, Regional Control Centre and State Control Centre were activated to provide support and structure at the scene.

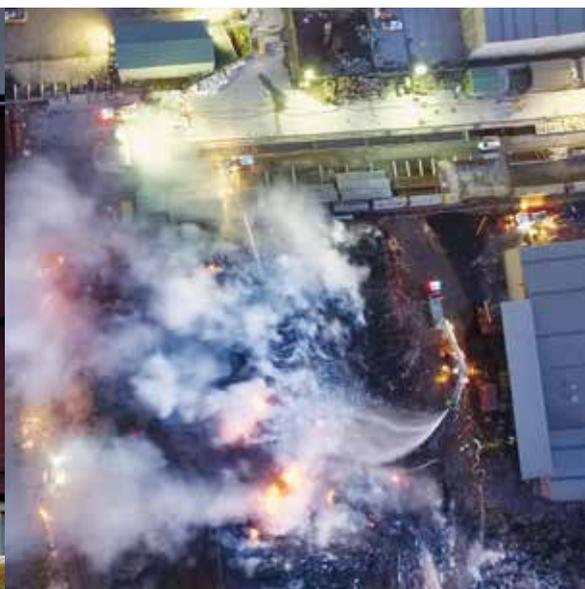
Soon after the initial fire call, a relief centre was established at a nearby community building. This provided a place for residents of nearby houses

and other affected community members to receive monitoring and support. Ambulance Victoria treated eight people at the relief centre, and one patient was transferred to hospital in a stable condition. Throughout the first night of the incident, paramedics responded to numerous triple zero calls for respiratory problems. Three patients were transferred to hospital in a stable condition.

To aid extinguishing efforts, MFB requested additional help from fire and rescue services in surrounding states (SA, NSW and ACT). The interstate brigades provided vital compressed-air foam capabilities and specialist advice. While firefighters worked around the clock to contain the blaze, large plumes of toxic smoke covered surrounding suburbs. Experts from the Environment Protection Authority (EPA) provided health advice to fire rescue personnel and residents, and an MFB Brigade



MFB personnel and appliances at the incident site



(Top) An aerial view of the incident.



(Bottom) Commanding stakeholders gathered following the transfer of control to the incident control centre.

Medical Officer assisted Ambulance Victoria with patient treatment and assessments.

Scientific advisors and HAZMAT technicians from MFB supported the EPA with atmospheric monitoring, and undertook smoke plume modelling to better understand the impact of the fire and spread of the smoke. Strong winds spread the smoke and particulate matter south of the fire, with almost 120 homes in the nearby suburb of Dallas issued a notice to evacuate. Residents of other smoke-affected neighbouring suburbs were advised to stay indoors with windows and doors shut and heating or cooling systems turned off.

During the incident, several vital pieces of safety equipment used to monitor air quality were stolen from the scene. Despite this setback, and after a colossal effort from responders, the fire was declared under control before 9.00 am on Saturday 15 July. Firefighters remained

on-site and worked around the clock for 11 days following the outbreak to monitor the situation and provide support. Control of the site was transitioned back to SKM Recycling after almost two weeks of firefighting efforts, and the MFB remained involved throughout the entire relief and recovery phase.

In the days following the incident, the EPA raised concerns over high readings of the bacteria *E. coli* in site runoff water. The MFB swiftly communicated procedures to all operations staff to prevent cross contamination of soiled personal protective clothing. The high levels of bacteria also caused hundreds of dead fish to wash up along the banks of local waterways. The local council, along with the EPA and other health and environment bodies, issued advice to residents to steer clear of all nearby creeks, rivers and lakes. Almost 400 dead fish and about 140 million litres of contaminated water had to be removed

TAKING CONTROL

Due to the protracted nature, size and complexity of the incident, plus the large number of emergency service and other agencies involved, the decision was made to transfer control from the site to the incident control centre (ICC) complex in Burnley on the opposite side of the city. This was the first control transfer of this nature in MFB history.

All agencies supported MFB's transfer of incident control to the off-site ICC, which ensured more efficient management of the event. It also meant that agency representatives and responders at the scene could provide sophisticated situational awareness for coordinating personnel based at the ICC. The ICC provided a workspace where multiple agency representatives were able to contribute to a joint mitigation strategy, and efficiently share information and resources throughout the incident.



Compressed air foam is used to extinguish the fire.

from the nearby Merlynston Creek, which runs into vital city waterways.

The incident also affected the local economy, as businesses in the surrounding industrial precinct remained closed for several days while crews extinguished the fire. One of MFB's main priorities was to ensure the businesses were back up and running in a safe environment as soon as possible.

The event was a significant display of interoperability and high-level coordination between emergency response and other government agencies. MFB firefighters and command personnel worked seamlessly to minimise risks to the community alongside the CFA, Victoria Police, Ambulance Victoria, Victorian State Emergency Services, and the ACT, NSW and SA specialist fire rescue teams. MFB collaborated with the EPA, Hume City Council, Melbourne Water, Yarra Valley Water and associated state government departments to minimise the damage caused by the incident. The brigade also coordinated several private contractors to ensure traffic management of the surrounding area, excavate the site and meet catering needs of those involved.

Due to the complex nature of the event and the number of internal departments involved in incident mitigation, MFB comprehensively

debriefed internal personnel. In addition, the organisations that responded also gathered for an interagency debrief after the incident.

The two-week commitment from MFB and other emergency management partners was an exercise in precision, cooperation and endurance; all parties worked together to mitigate the consequences to the community, the environment and personnel. Key to the incident resolution was the sophisticated level of interoperability, which remains fundamental to the ongoing work of all agencies to prevent a future event of this magnitude and nature.

Across the nation, the media praised the expert skills of all responders and their ability to cope with a situation of this complexity and magnitude. The Victorian Emergency Services Minister, James Merlino, also publicly commended the work of MFB firefighters and other agencies throughout the incident.

The incident has prompted a call for a joint task force between the EPA, MFB, CFA and Emergency Management Victoria to audit all recycling facilities across Victoria. The taskforce is currently investigating the need for management plans, appropriate storage of recyclable material and operator risk assessments to reduce the risk of a similar event occurring in the future. ■

US STUDY TOUR ENDS ON A HIGH

The 14-day US study tour run by Fire Protection Association Australia (FPA Australia) wrapped up in July after visiting New York City and Boston.

As reported in the last issue of *Fire Australia*, the tour group was hosted in New York by the New York City Fire Department. Manhattan Borough Commander, Chief Roger W Sakowich, gave the group a personal tour of the 9/11 Memorial, and the new One World Trade Center (or Freedom Tower) and its cutting-edge fire safety systems.

After New York, the group moved on to the final leg with a visit to Boston to attend the annual conference of FPA Australia's US sister organisation, the National Fire Protection Association (NFPA).

The group also visited the NFPA's Quincey headquarters and met with researchers, staff and CEO, and President Jim Pauley. They toured the new state-of-the-art Tyco Global Technology Center in Cranston, Rhode Island, and squeezed in a group dinner at the iconic original Cheers Bar in Beacon Hill.

"Visiting the Tyco testing and training facility was fantastic," said tour attendee Simon Burt, from the Northern Territory Fire and Rescue Service Fire Safety Command.

"They had rooms where they could set fires and demonstrate sprinkler systems with all kinds of temperature variations. You don't often get the ability to watch a fire build and see the effectiveness of sprinklers like that."

After leaving Boston, the group detoured to the seaside town of Newport, home of the 1983 America's Cup winner *Australia II*. The City of Newport's Fire Chief took them on a tour of one of the town's fire stations.

According to Mr Burt, the strength of the tour lay in the ability to spend quality time with US fire protection professionals, and to share the lessons learned with tour group members from the full breadth of the Australian industry.

"I found the study tour highly relevant to all areas of the fire industry, and travelling with a delegation of FPA



PHOTO: CARMEN QUINN

The tour group.



PHOTO: CARMEN QUINN



PHOTO: CHRIS WYBORN

The tour group visited Newport's fire stations

Australia members enhanced the knowledge gained," he said. "I would highly recommend attendance by fire department and fire protection personnel on future FPA Australia study tours."

Attendees were: Chris Honey, Peter Keating, Sabrina Keating, Gina Patrick, Peter Blain, Simon Burt, Fiona Burt, Ben Vardy, Chris Orr, Lyndall Orr, Alan Wilson, Scott Williams and Chris Wyborn.



PHOTO: LYNDALE ORR

The National Fire Protection Association's annual Conference & Expo is one of the biggest fire protection shows in the world

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ALIGNING NEEDS WITH HARDWARE IN NDIS DISABILITY HOUSING

High fire safety requirements may leave a shortfall in disability housing, but aligning them to residents' needs could make the outcomes of the NDIS safer and more efficient.



When the National Disability Insurance Scheme (NDIS) was introduced in 2013 in Victoria and Tasmania, one of the biggest changes it offered people with disabilities was individual funding that could be used for care, including provisions for a carer and accommodation. This significant, 'once-in-a-lifetime' social reform aimed to give those under the scheme the ability to live their lives with more independence, self-determination and flexibility.

When fully implemented, the cost of the NDIS is expected to be around \$22 bn per year, and cover hundreds of thousands of people.

The traditional housing model for people with very high support needs was to be institutionalised or to live in supported accommodation, which greatly limited their options. This accommodation was typically classification 3, 9a or 9c under the Building Code of Australia (BCA) Volume One. Under the NDIS, however, people can use their funding to live in freestanding houses: both existing and

new purpose-built properties.

The question then is, what fire safety measures are appropriate for existing or new Class 1a, 1b, 2, 3 or 9 buildings if they are to be occupied by disabled clients in a residential setting?

Housing must be registered with the NDIS to be eligible for funding, and the scheme's requirements include fire protection systems that exceed BCA requirements and what is typically available in existing residential buildings. In some states and territories, this includes fire sprinkler systems.

The NDIS doesn't discriminate by disability type, and the requirements for fire safety systems are the same whether residents have a high or low level of physical disability. In many cases the fire safety systems required by individual residents does differ depending on their disability. For residents with a hearing disability, smoke alarms emitting sound are not effective; visual alerts together with a sound alarm are needed. For sprinklers, mobility is the critical factor. Some residents, particularly those with a minor disability, can evacuate quickly

and therefore are less likely to need sprinklers, while those with limited mobility may need the extra evacuation time that sprinklers provide.

This blanket requirement for high-level fire safety systems, if applied, would provide a high level of safety to all housing funded under the NDIS—but the approach faces several practical problems. The most significant is the potentially unnecessary cost burden placed on funding for NDIS clients who may not need expensive systems, such as sprinklers. The cost of retrofitting these systems to existing housing is significant, and some landlords may be unwilling to have them fitted in rented properties. This either limits the properties and support services that NDIS-funded clients can afford, or necessitates increased funding, thereby limiting the number of clients the scheme can cover.

The second key challenge is the sudden market demand these requirements will create, and the ability of the fire protection industry to meet it. When the NDIS is fully rolled out across Victoria in the first half of 2019, for instance, it's estimated it will cover 105,000 people in the state. This could potentially generate unexpected and unmanageable demand for fire safety professionals, increasing the likelihood that NDIS clients will be left unable to find suitable housing, or are left without fire safety systems they may need.

There's an opportunity, therefore, to align NDIS requirements with the fire safety needs of individual clients. Determining the requirements on a fire risk-assessment basis would ensure that disability housing would still have a high level of fire safety, while giving clients the maximum level of flexibility and ensuring NDIS's finite funding can be as effective as possible. ■

A paper on this topic has been prepared by Dr Ian Bennetts, Stephen Kip and Henderikus Van Ravenstein, outlining the issues and potential resolutions to the requirements for accommodation for persons with a disability under the NDIS. Download a copy at: <https://goo.gl/hKXbph>.



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MANAGING ANIMALS IN EMERGENCIES

Research is informing how to incorporate animals into emergency planning.

BY **MEL TAYLOR,**
MEGAN MCCARTHY

Bushfire and Natural Hazards CRC
and Macquarie University

AND **JENNY BIGELOW**

Blue ARC

Despite 63 percent of Australian households owning pets—and 90 percent of owners considering pets as family members—they are still one of the most overlooked elements of household emergency preparedness.

The lack of planning for pets and animals in emergencies can endanger the lives of owners, their animals and emergency services personnel. Owners, mindful of the complexity in moving animals, may delay their response and leave it too late to evacuate—or decide not to evacuate at all. Much of the research into animal emergency management has emerged from the US after the wide-ranging animal-related challenges associated with Hurricane Katrina. US experts Sebastian Heath (Federal Emergency Management Agency) and Robert Linnabary (retired from University of Tennessee College of Veterinary Medicine), found that “there is no other factor contributing as much to human evacuation failure in disasters that is under the control of emergency management when a threat is imminent as pet ownership”.

In Australia, the Bushfire and Natural Hazards CRC project Managing Animals in Disasters has been addressing the lack of Australian research by studying the disaster experiences of animal owners and responders, identifying challenges for emergency service agencies, and identifying best-practice approaches.

To explore the issues of pet and animal evacuations in a bushfire-prone area of NSW, the project teamed with a newly formed community-led group called the Blue Mountains Animal Ready Community (Blue ARC).

The Blue Mountains covers an area of around 1,436 square kilometres, with



PHOTO: BLUE ARC

a large part of the area dedicated to the Blue Mountains National Park, alongside a population of approximately 75,000. It is also one of the most bushfire-prone areas in the world. In October 2013, the Blue Mountains experienced the worst bushfires the area has ever seen.

The Blue ARC research project aims to identify routes for engagement with, and within, communities to promote emergency planning and preparedness for owners and their animals, and reinforce a community culture of shared responsibility.

To gauge current levels of preparedness for animals—and local issues related to this—residents were surveyed about their experiences and needs, including those who had been affected by the October 2013 fires.

The online survey was completed by 386 people and identified a generally

poor level of preparedness, with 57 percent of the sample overall having planned for their animals. Most of this planning, however, was low level, such as thinking about and discussing what to do in an emergency. Only 20 percent of respondents felt ‘very prepared’ and reported that they had a written or well-rehearsed emergency plan. Less than half knew with certainty where they would take their animals if they had to evacuate, and only 20 percent had asked a neighbour, nearby friend or family member if they would help evacuate their animals in their absence. As more than 50 percent of employed residents in the Blue Mountains commute to work away from the mountains, having this backup support is extremely important.

The survey found a strong dependency on emergency service

agencies, with 62 percent of respondents indicating that they would turn to emergency service agencies for information to enable them to prepare and plan for their animals. Respondents also reported that they would look to local veterinarians (58%), RSPCA (40%), social media (46%) or family and friends (44%) to provide information.

Respondents who had been involved in previous emergencies with their animals provided unique perspectives on planning, evacuation and recovery. One resident who evacuated during the October 2013 bushfires reported: "Worrying about the animals was one of the most stressful parts of the entire process for me."

During an emergency situation, a lack of preparedness can quickly become time-consuming and stressful, respondents noted. One respondent recalled during an evacuation: "We could not access two cat carriers as they were in storage in the garage. Police escorted us out and we had to leave immediately so we just put [the] cats in the car."

Having multiple animals, multiple species of animals, or animals with health or behavioural issues can exacerbate the stress, and make evacuation more difficult. Additionally, the loss of pets in a disaster can significantly affect an owner's recovery and resilience to future shocks.

This project has identified issues that animal owners have come across in a range of contexts and emergency events, and the concerns and problems faced in preparedness, response and recovery. As a result, it has provided emergency services and other stakeholders with information on priority community issues that can be addressed for the greatest gains in public and responder safety. Groups from the emergency services, as well as the local council, non-governmental organisations, veterinary practices and neighbourhood centres have been engaged. The mapping of animal ownership, and availability of local veterinary services and animal boarding facilities, will enable community members to plan more effectively. The 'community-to-community' activities of Blue ARC ensure that local solutions to identified problems are communicated back to the community.

The research with Blue ARC will be further developed to produce a community guide to establishing an animal ready community. The guide will promote emergency preparedness through a focus on animals, and will include the networks and collaborations



PHOTO: BLUE ARC



PHOTO: BLUE ARC

To reduce stress and worry, pet owners should properly plan for the care of their animals in case an evacuation is required.

Your voice, their lives.

Animals in Emergencies Survey
Blue Mountains & surrounding areas

Community emergency preparedness & planning for animals.
 Issues from previous emergencies. Local needs and gaps.
 Help give animals a voice by filling in the survey.

IMAGE: BLUE ARC

The Blue ARC online survey identified a generally poor level of bushfire preparedness for animals among pet owners in the Blue Mountains.

The lack of planning for pets and animals in emergencies can endanger the lives of owners, their animals and emergency services personnel.

required, how to identify the needs of local animal owners, and suggestions for community activities. The resource pack associated with the guide will include materials developed as part of the current project, including a question bank for surveys, templates for posters and fact sheets, and plans for low-cost community training.

Developing an animal ready community provides extra capacity and reach for emergency services

agencies. Such groups, with their broader community networks, can also harness additional community capacity—including access to those with animal-specific handling skills. It is vitally important to develop these groups in at-risk areas to ensure people have prepared and planned for their animals, and can therefore evacuate safely. ■

Find out more about this research at: www.bnhcrc.com.au/hazardnotes/35.

COLLABORATING FOR SUCCESS AT AFAC17 IN SYDNEY

The sector's premier annual conference and exhibition, AFAC17 powered by INTERSCHUTZ, was held from 4–7 September 2017 at the International Convention Centre Sydney.

Bart van Leeuwen, senior firefighter and big data expert from the Netherlands, delivers his keynote address.

BY **FREYA JONES**

AFAC

The four day AFAC17 powered by INTERSCHUTZ conference and exhibition saw more than 3,200 people come together to discuss the latest in research, learnings and practice across emergency management and natural hazards.

Held at the International Convention Centre Sydney, the event was a big success, with local and international leaders sharing knowledge from a range of fields. Under the conference theme 'Collaborating for Success—Improving performance in emergency management', the program boasted more than 100 speakers.

AFAC CEO Stuart Ellis AM remarked on the overall success of the conference and exhibition.

"The theme of the conference was collaborating for success and it was really great to see so much collaboration occurring throughout the four days," said Mr Ellis. "We were also very pleased to have such an extensive display of technology, equipment and live demonstrations in the exhibition. This has really added another dimension to the conference and exhibition."

Natural hazards science on show

AFAC17 opened on 4 September with the Bushfire and Natural Hazards CRC Research Forum. Researchers and end user practitioners heard about the latest science and the ways it is being used across the sector.

The Research Forum kicked off with a keynote presentation from Dr Blair Trewin of the Bureau of Meteorology, speaking about climate change and hazard profiles in Australia. He was followed by Dr Ann Bostrom from the



University of Washington in the US, who presented on improving forecast and warning systems for better risk management. Closing out day one was Professor Shane Cronin, Director of The Resilience to Nature's Challenges, National Science Challenge New Zealand. Prof Cronin shared his perspective on building resilience and what knowledge is needed.

CEO of the Bushfire and Natural Hazards CRC, Dr Richard Thornton, commented that the Forum was a great way to showcase the findings of CRC research.

"Findings are really flowing now from the research, and our partners are embracing the results and working hard to implement the work into their practices," he said. "It was a fantastic chance for the broader sector to see how our science is being used, as well as what is to come over the next four years."

Learnings and insights in emergency management

Day two of AFAC17 was officially opened by The Honourable Troy Grant MP, NSW Minister for Police and Emergency Services, who reflected on the many fires and floods that NSW has endured recently. Plenty of important themes were explored throughout the conference, giving the emergency management community the opportunity to discuss and reflect on key learnings.

International keynote speaker, Bart van Leeuwen—senior firefighter and big data expert from the Netherlands—spoke on using data to drive performance. Mr van Leeuwen explained that firefighters and emergency personnel are often overloaded with information sources all telling them different things. He spoke of smart data, and the importance of determining what information we



One of the demonstrations on show was FLAIM Trainer, a virtual reality training tool for firefighters.



Dr Richard Thornton launches the Bushfire and Natural Hazards CRC Southern Australia Seasonal Bushfire Outlook 2017.

actually need—and how to better make use of it.

Graeme Head, NSW Public Service Commissioner, explored collaborating for success and the need to establish meaningful partnerships across the sector. On day three, Kristen Hilton, the Victorian Equal Opportunity and Human Rights Commissioner, spoke about strengthening organisations through creating diverse and inclusive workforces. Ms Hilton gave a candid reflection of her role in the Victoria Police review and the work she is doing with the Commission.

AFAC President and Commissioner of Fire & Rescue NSW Paul Baxter QSO officially launched the Fire and Emergency Male Champions of Change Program on day three. He gave an overview of the Male Champions initiative, started by former Sex Discrimination Commissioner Elizabeth Broderick, and highlighted some of the current initiatives to increase diversity in the sector. AFAC CEO Stuart Ellis AM

spoke about the professionalisation of the sector and the national registration of certified practitioners through AFAC's Emergency Management Professionalisation Scheme.

On day three, the closing keynote speaker Steve Vamos, Non-executive Director of Telstra and former CEO of Microsoft Australia and New Zealand, spoke about how to create and enable innovation, and some of the barriers to change.

An impressive display of equipment and technology

Over three days, delegates and visitors were invited to explore the largest exhibition ever staged as part of an AFAC conference. Spanning 14,000 sq m, this year's exhibition had 189 exhibitors showcasing products, services, technology and equipment for fire and emergency services. As well as the vehicle manufacturers and supporting equipment suppliers, there were large displays of aerial solutions,



Ed Pikusa of the Department of Environment, Water and Natural Resources SA (left), and Professor Holger Maier from the University of Adelaide (middle) were awarded the CRC Outstanding Achievement in Research award by CEO of the Bushfire and Natural Hazards CRC Dr Richard Thornton.



Cain Trist of Emergency Management Victoria (left) and Queensland Fire and Emergency Services' Leigh-Anne Sorensen (right) receive their Achiever of the Year awards from Laurie Lavelle.

breathing apparatus, communications, technology and software, confined space equipment, diesel engines, generators, education and simulation providers, fire suppression, first aid and medical, hazard reduction, PPE and fabrics, rescue equipment, water rescue and more.

In addition to the comprehensive exhibition, the Expo Stage Program featured short, practical presentations aimed at operational personnel. The outdoor deck area provided an opportunity for attendees to catch live demonstrations, including a road-crash rescue performed by Australasian Road Rescue Organisation. An impressive display of vehicles also featured on the outdoor deck.

Within the Exhibition, the Knowledge Lounge provided delegates with an opportunity to network and engage in deeper discussions. Many keynote and invited speakers participated in the Meet the Speaker Program, where they attended the Knowledge Lounge following their presentations to allow further discussion

(Right) Delegates enjoyed a fabulous evening at the Gala Dinner.

(Left) The outdoor deck offered attendees the opportunity to watch live demonstrations.



The exhibition was the largest yet at an AFAC conference, covering 14,000 sq m with 189 exhibitors.



about their projects and research. The Knowledge Lounge also included an impressive display of more than 150 conference posters, highlighting research and projects across the sector.

Recognising industry achievements

In acknowledgement of the outstanding efforts of people from the sector, the AFAC17 Welcome & Awards took place on the Monday of the conference week.

The 2017 Laurie Lavelle Achiever of the Year Award was presented to two winners. Cain Trist from Emergency Management Victoria was awarded for his work in leading the introduction of the Emergency Management Common Operating Procedure. Leigh-Anne Sorensen of Queensland Fire and Emergency Services (QFES) was recognised for her role in taking on the forensic assessment of QFES's position in relation to recommendations made in the Margaret Allison Independent Review.

The Motorola Solutions Knowledge Innovation Award was awarded in two categories—agency and individual—in recognition of efforts to advance knowledge and use research in the emergency management sector. The 2017 Agency Award was presented to the ARENA Working Group, a network of practitioners who worked on the ARENA aerial resource information management platform. The 2017 Individual Award was presented to

Mike Wouters from the Department of Environment, Water and Natural Resources SA, for his significant contribution to advancing knowledge and practice in bushfire management at state and national levels.

Taking out the Bushfire and Natural Hazards CRC Outstanding Achievement in Research Award was the CRCs Economics and strategic decisions cluster, led by Professor Holger Maier from the University of Adelaide and Ed Pikusa of the Department of Environment, Water and Natural Resources SA. The CRC Special Recognition Award went to PhD student Steve Sutton from Charles Darwin University.

The Judges' Choice Poster Award went to John Towt from Forest Fire Management Victoria (Department of Environment, Land, Water and Planning) for his poster *Joint procedures in tree hazard: from agency agreement to cultural practice*. The People's Choice Poster Award was received by Michelle Englesman, Mark Whybro and Jeremy Fewtrell from Fire & Rescue NSW for *Firefighter exposure risks and subsequent reproductive effects*.

AFAC17 featured many great networking opportunities, including the Gala Dinner, which offered attendees a glittering night of illusion and magic held in the ICC Grand Ballroom. Throughout the conference, enlightening discussions and conversations centred

around the collaboration theme. On Twitter, AFAC17 attendees shared approximately 3,900 conversations, encompassing a total reach of 2.2 million and trending first in Australia.

The conference closed with a professional development and field trip day, with trips looking at bushfire risk in the Blue Mountains, flood mitigation in the Hawkesbury–Nepean region and the Rozelle building fire and explosion. Seven workshops also took place on learning from major incidents, geospatial intelligence, emergency management safety, disaster resilience education, prescribed burning, risk ownership and growing diversity in emergency services.

The incredible success of the AFAC17 powered by INTERSCHUTZ conference and exhibition reflects the ongoing efforts of the host agencies: NSW Rural Fire Service, Fire & Rescue NSW, NSW State Emergency Service, ACT Emergency Services Agency, ACT Parks and Conservation Service, Office of Environment and Heritage NSW and Forestry Corporation of NSW. ■

All of the resources from the conference including papers, presentations and highlights videos are available from the AFAC and CRC websites. Visit: www.bnhcrc.com.au/publications/researchproceedings2017 for day one's proceedings and: www.afac.com.au/events/proceedings for days two and three.



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Many people left written tributes and messages of hope on a wall near the scene of the deadly inferno.



THE GRENFELL LESSON

Grenfell provided a costly lesson on what happens when fire protection requirements are neglected.

BY **TOM BICKNELL**

Fire Protection Association Australia

The fire in London's Grenfell apartment block in June was a tragedy. At least 80 people perished, let down by a failure to enforce requirements for fire safety systems that could have saved their lives.

In every event like this, it's our responsibility to learn as much as we can to prevent it from happening again. So what are the lessons for Australia?

In this country we're very proud, and rightly so, of a National Construction Code (NCC) that demands a high level of fire safety in our buildings. Australia knows what a safe building looks like, and no building conforming to the NCC's requirements could experience a fire as terrible as Grenfell's.

The problem, of course, is that many buildings around Australia don't conform to the code. In the wake of the Lacrosse apartment fire in Melbourne in 2014—and then with much more

energy following Grenfell—audits of Australian high-rise buildings have found a shocking number of examples of non-conformity, particularly in the use of non-compliant cladding.

Grenfell provided an example of what can happen when the fire safety systems our building code and standards require aren't in place. The lesson, then, is that we need to fix the environment that has allowed buildings to avoid compliance with the code. And to do that, two things need to be improved.

The three pillars

Fire Protection Association Australia (FPA Australia) believes three 'pillars' are necessary for an effective fire protection industry:

- ◆ conforming products—products that are what they claim to be, are validated and are fit for purpose
- ◆ conforming people—professional, educated, accredited practitioners that are fit for action
- ◆ enforcement—empowered regulators,

proactive and willing to ensure people and products come together to achieve compliant building outcomes.

The prevalence of combustible cladding discovered since Grenfell clearly illustrates that the latter two pillars need to be improved. If the non-compliant use of cladding was inadvertent, the problem could have been avoided by making sure only competent fire safety practitioners who understood the code were performing or signing off on the work. If it was a case of deliberate substitution, the problem could have been caught by empowered regulators who enforce the code.

Competent, professional practitioners

Ensuring practitioners can demonstrate their competency is the goal of the Fire Protection Accreditation Scheme (FPAS). The scheme is clearly being welcomed by the industry; the number of individuals with accreditation under the scheme is nearing 2,500, and the

classes of accreditation continue to expand. However, FPAS is voluntary.

Around the country, moves are now being made to require some form of mandatory accreditation to conduct fire protection work. Most notably, the NSW reforms that came into effect on 1 October will require workers preparing fire safety statements and fire safety design work to be accredited by an industry scheme that the NSW Government has yet to recognise (see page 36 for more). Recent reforms in South Australia require workers doing 'inspect and test' to be registered and have completed eight units of competency (see page 12).

In its interim report on aluminium composite cladding in September, the Senate inquiry into non-conforming building products also recommended the establishment of a mandatory national licensing scheme with requirements for continuing professional development, applying to all building practitioners. FPA Australia supports this approach.

We will continue to work with all levels of government to ensure any future accreditation or competency requirements are sound and align with the requirements of the work.

Ensuring enforcement

One of the most promising developments in this area is the recent appointment by the Building Ministers' Forum of two experts to lead an examination into compliance and enforcement problems in the construction sector. As mentioned in the News section of this issue, Professor Peter Shergold AC, Chancellor of the University of Western Sydney, and Bronwyn Weir, a partner at Maddocks law firm and a legal expert in building and construction, will assess issues affecting the implementation of the NCC.

The Senate inquiry interim report also made several recommendations to increase checks and penalties for non-compliance.

The take-home message from all this is that Australia appears to be heeding the lessons from Grenfell. If we can take something positive from that disaster, it's the momentum generated in Australia to fix the structural problems that have eroded fire protection outcomes. The building, construction and fire protection industries need to accept that the responsibility for compliance rests with us. As the people on the ground, we need to help guide that momentum.

There's a risk in losing the



momentum to simple but ineffective 'solutions', such as banning high-profile combustible cladding products. We need to keep the public discussion focused on the more complex—but necessary—fix to our accreditation and enforcement systems. If we can do that, the industry will be on the best footing in years to solidify the three pillars of effective fire protection. ■

What can we learn from the tragic Grenfell Tower fire?

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FIRE RISK HIGH THIS SEASON

The Bushfire and Natural Hazards CRC's annual bushfire outlook reveals the country's most at-risk areas.

PHOTO: KEITH PAKENHAM, COUNTRY FIRE AUTHORITY

The Wye River Christmas 2015 bushfire in Victoria.

BY **NATHAN MADDOCK**
Bushfire and Natural Hazards CRC

With most of Australia experiencing a combination of above-average temperatures and below-average rainfall over winter, large parts of the country face above-normal bushfire potential for the fire season. The *Southern Australia Seasonal Bushfire Outlook 2017*, released by the Bushfire and Natural Hazards CRC in early September, shows the most at-risk areas. The weather has been warmer and drier than average over winter, suggesting that the southern fire season is likely to commence earlier than usual and be more active than normal.

The bushfire outlook is used by fire authorities to make strategic decisions on resource planning and prescribed fire management for the fire season.

Queensland

Coastal areas south of Rockhampton to the NSW border have received above-average rainfall, due to Severe Tropical Cyclone *Debbie* in March and a subsequent coastal low in May. This rain has increased fuel growth. Additionally, winds associated with *Debbie* have stripped canopies of leaves, leaving the

fuels below exposed to sunlight where they would normally be in shade. These leaves are now suspended as elevated and near-surface fuels. The canopy damage also changes the wind field, so that any fires in these areas will be exposed to higher-velocity winds than normal, as well as drier air. This has led to above-average fuel growth in this coastal strip, up to several hundred kilometres inland, as well as for much of south-east Queensland. July and August saw record temperatures for Queensland, along with frosts in inland parts, increasing fuel availability for the fire season.

Gladstone, Biloela and all of the north coast region, including Maryborough, Kingaroy and Monto, as well as Chinchilla, Toowoomba, Inglewood and the south-east, are expecting above-normal fire potential. The remainder of southern Queensland is expecting normal potential for the fire season.

New South Wales

Rainfall for much of NSW has been below to very much below average over winter. Although minimum temperatures have been mostly cooler than average during this time, maximum temperatures have been warmer than average. This has the effect of preconditioning fuels to be more

susceptible to fire. In forests, this dries the fine fuels, while in grasslands, frosts cause grass to cure early.

The El Niño outlook is for neutral conditions through to the end of 2017. While El Niño events are traditionally associated with bad fire seasons, some of the most significant bushfires in NSW in recent history have occurred during neutral El Niño conditions. It is expected that significant fires could occur this fire season.

Soil-moisture deficits (particularly west of the ranges) and the likelihood of higher-than-average temperatures through spring have led to the conclusion that forest fuels have above normal fire potential. Grassland curing was significantly higher at the time of the outlook's release than last year due to significant frost, although grass fuel loads are significantly reduced west of the divide. The potential for grass growth is significantly reduced due to the rainfall deficit, although this could change depending on spring rainfall.

The current NSW outlook is for above-normal fire potential for eastern forested areas of the state. The exception to this is the Far North Coast, where a normal fire season is predicted. Grassland areas are predicted to have normal fire potential due to reduced fuel loads.

Australian Capital Territory

After a dry winter, the upper soils in the ACT are drier than average. It is unlikely that the ACT will receive enough rain during spring to recover from the existing soil-moisture deficit. At the time of the outlook's release, forest fuels were drier than usual for the time of year. Frost curing of grasslands has been above average over winter and due to the prolonged frost period, a greater-than-average area has been affected. The bushfire potential for this outlook period is assessed as above-normal, as with surrounding NSW areas. As summer approaches, conditions will be closely monitored, particularly if there is a change to wetter conditions.

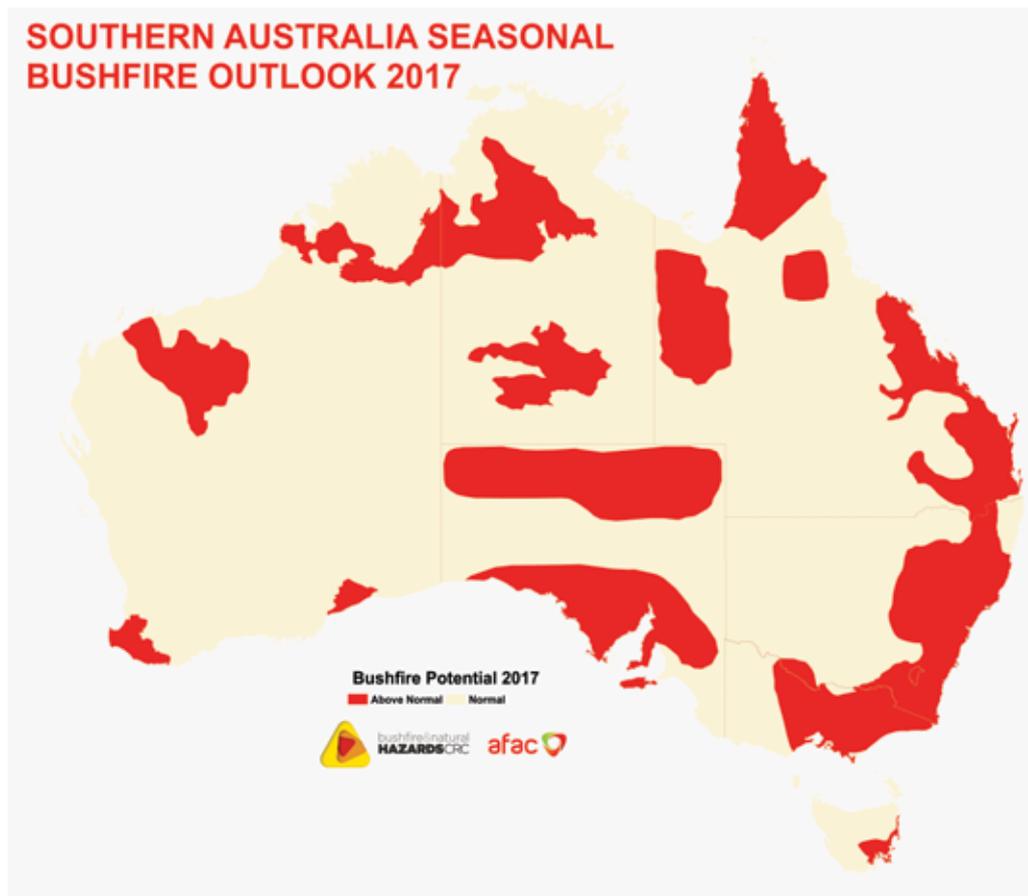
Victoria

Signals of sufficient strength and confidence indicate an expectation for an early start to the fire season in some parts of Victoria. Low winter rainfall, coupled with longer-term, severe rainfall deficiencies in southern forests and the Bureau of Meteorology's outlook for drier and warmer conditions, gives rise to an expectation of above-normal fire potential.

Severe rainfall deficits persist along the Great Dividing Range in Victoria. Forests in these areas may experience sudden changes in fire activity with the onset of warmer or windier weather. Melbourne's water catchment areas and higher-value forests along the southern slopes of the Great Dividing Range have a long-term history of dryness, with expected weather patterns looking set to continue this trend. Despite their very low temperatures, westerly winds continue to dry out undergrowth. This may be creating a moisture differential between west-facing and east-facing slopes, in addition to the existing differential between northern and southern slopes.

The severity of early bursts of heat on north-westerly winds across Victoria depends on rainfall and daily maximum temperature in SA's northern pastoral districts during spring. As soils in the interior warm and dry, any moisture-bearing air is heated and dried by the time it reaches Victoria. These bursts of heat, combined with forecast rainfall and temperatures to the end of spring, may be enough to move drought indices in some tall forests up to 100 by the beginning of summer. This is a critical threshold for these forests, allowing them to support fire growth. These areas will be closely monitored for emerging trends in the coming months.

SOUTHERN AUSTRALIA SEASONAL BUSHFIRE OUTLOOK 2017



Tasmania

Most of Tasmania has received below-average rainfall during 2017, with winter very dry—especially in the south and east. Soil-moisture levels at the time of the outlook's release were well below normal in some places, and significant rain would be required to recharge these soils. Tasmania is expecting above-normal fire potential in the south, in the Derwent Valley and in the east, along the coastal strip. The fire season will commence early in these areas, and subject to spring conditions, may produce significant fires. The remainder of Tasmania is classified as normal fire potential.

South Australia

While 2016 saw SA's second-wettest winter on record, 2017 has seen very different conditions, with a period of below-average rainfall recorded across large parts of the state. This period of reduced moisture, combined with the abundant growth of fine fuel caused by last year's rain, has resulted in areas of above normal fire potential.

This area of increased risk includes the APY lands and northern pastoral areas, as well as parts of the Riverland, Clare Valley, Yorke Peninsula, Eyre Peninsula and the west coast. In addition, Kangaroo Island has also experienced well-below-average rainfall, with parts

of the island recording the driest June since records began in 1887.

The remainder of SA, including the upper and lower south-east, has experienced average or just above average winter rainfall. These areas can expect normal fire potential.

Western Australia

South-west WA recorded its driest autumn for five years in 2017. Consequently, there is potential for above-normal bushfire activity within the southern parts of the Swan coastal plain, the majority of the southern jarrah forest and the Warren biogeographic regions.

A record wet 2016–17 summer period for WA, from the mid-west to the south coast, has seen high perennial grassland fuel loads develop. However, the pattern of rainfall, recent bushfires, prescribed burning, cropping and grazing activities have constrained potential above-normal in grass fuel loads in many areas, with the exceptions being the eastern Gascoyne, Pilbara and Eucla regions. Higher than average perennial grassland fuel loads, combined with drying soil moisture as summer approaches, have resulted in some areas in these regions being assessed as having an above-normal fire potential for the southern bushfire season. ■

BUSHFIRE ACCREDITATION RISING IN WA

Rapid industry adoption of the BPAD Accreditation Scheme in WA is providing a template for other states and territories to improve bushfire outcomes.

BY **TOM BICKNELL**

Fire Protection Association Australia

FPA Australia's Bushfire Planning and Design Accreditation Scheme provides professional training and accreditation for bushfire consultants to inform land-use planning approvals and building permit processes.

In August 2015, the WA Government announced that Fire Protection Association Australia (FPA Australia) was the first—and so far, only—organisation recognised as an accrediting body for bushfire practitioners in accordance with the state's Bushfire Accreditation Framework, which had been released earlier that year. Since then, FPA Australia's Bushfire Planning and Design (BPAD) Accreditation Scheme has been adopted enthusiastically by the state's bushfire industry. More than 100 individuals have been accredited through the scheme in WA, and more than 500 have received the related training from FPA Australia.

BPAD is designed for practitioners delivering bushfire assessment, planning, design and advice services. It accredits practitioners who meet criteria based on specific accreditation and competency requirements, including a detailed knowledge of and ability to practically apply the relevant planning, development and building legislation and policies, the Building Code of Australia and Australian Standard AS 3959 *Construction of buildings in bushfire-prone areas*.

The WA Government's recognition of BPAD was the end result of an independent review it commissioned into bushfire risk management practices, conducted by former Australian Federal Police Commissioner Mick Keelty. The review made 55 recommendations, five of which related to the planning and building portfolios.

Based on those recommendations, in March 2014 the WA Government announced a package of reforms to strengthen its bushfire risk management. One of those was a commitment to develop a professional training and accreditation system for bushfire consultants to inform land-use planning approvals and building permit processes.

"The bushfire assessment, planning and design sector has traditionally had no entry requirements to practise, and little in the way of frameworks for credentialing practitioners," said FPA Australia General Manager Education



and Bushfire Services Chris Wyborn.

FPA Australia had earlier recognised the need for a credentialing framework, and consulted with industry, regulators, fire agencies and end users to develop the BPAD Accreditation Scheme in 2006.

In its reforms, the WA Government saw the same need. The government's recognition of the scheme in 2015 has clearly been welcomed by the industry.

"The response from the industry has been very positive," said Mr Wyborn. "The stats probably demonstrate this better than anything; to September 2017, 365 people have undertaken the five-day course, 236 have completed the two-day course and just over 100 practitioners have been accredited. Training has been provided to consultants, builders, planners, owners, building surveyors, and local and state government employees."

FPA Australia runs the scheme nationally, and has drawn on experienced bushfire professionals based in WA to deliver training locally, including Sean Winter, Mike Scott and Greg Penney.

Dr Winter is a bushfire consultant with Bushfire Prone Planning (BPP) and lecturer at the University of Western Australia, who has extensive knowledge of fire management operation.

Mr Scott is a bushfire consultant and joint owner of BPP who had an extensive career with the Department of Fire and Emergency Services managing the bushfire strategy and planning before

joining BPP. He has a Graduate Diploma in Bushfire Protection, and qualifications in prescribed burning, bushfire behaviour analysis, forestry and fire investigation.

Mr Penney is a career firefighter who has completed a Bachelor and Masters of Paramedical Science by Research (Firefighting Dynamic Risk), Graduate Diploma of Bushfire Protection. He is currently completing a Masters of Engineering (Building Fire Safety and Risk) and PhD on bushfire modelling and firefighting strategies.

Mr Wyborn explained that the biggest benefits for the community and government of the increasing BPAD adoption in WA are increased safety and reliability due to the professional assessment of bushfire hazard and risk, and determination of appropriate mitigation measures.

"The community has confidence that an accredited practitioner will have the skills, knowledge and experience to undertake their project and be protected through public and product liability and professional indemnity insurance," he said.

WA is the second state to have adopted the BPAD Accreditation Scheme, following NSW where it was first developed. According to Mr Wyborn, its success in WA demonstrates how quickly an existing accreditation scheme like this can be implemented and start improving bushfire outcomes. It also provides a template for other states and territories to follow. ■

The background of the entire page is a nighttime photograph of the Brisbane city skyline. The buildings are illuminated with various colors of lights, and their reflections are visible in the water of the Brisbane River. Several boats are docked along the riverbank. The sky is dark, and the overall scene is vibrant and modern.

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BUSHFIRE PREDICTIVE CAPABILITIES PUT TO THE TEST

Australia's capability in predicting bushfires has been tried and tested through an evaluation of fire spread simulators, the first of its kind.

BY **FREYA JONES**

AFAC

Tools for simulating and predicting bushfires in Australia have been put to the test to highlight current capabilities and inform future planning for the sector.

A collaborative project, involving the Bureau of Meteorology (BoM), New South Wales Rural Fire Service (NSW RFS) and AFAC, has produced the *Bushfire Predictive Services Report: an evaluation of fire spread simulators used in Australia*.

AFAC and the NSW RFS engaged the BoM to undertake this comprehensive evaluation to assess four fire spread simulators for the purposes of operational fire spread prediction, and consider their potential for future applications, such as ensemble modelling.

The report looks at three commonly used simulators—Australis, Phoenix and Prometheus—as well as the Spark simulator framework.

Dr Simon Heemstra, Manager Community Planning at NSW RFS, was one of the key stakeholders in the project. He reflected that this was the first time these simulators had been formally evaluated.

"We wanted to know which one [of the simulators] works most accurately under different circumstances to look at future investment and how we could better improve the models," said Dr Heemstra. "One of the things that will help us is to determine which of the models is easiest to improve in the future, and what we

can learn from each of these models to build better modelling."

The evaluation compared the performance of each simulator across 10 case studies using data collected from historical fires around Australia provided by fire agencies in each jurisdiction. Case studies from NSW, Victoria, Queensland, SA, WA and Tasmania were selected to cover a range of climates and vegetation types. Having access to this data provided a key method of testing the performance of each simulator.

"We wanted to see if [the simulators] had done a good job in actually predicting that fire, and to do that we need to have the data that we've collected from historical fires," Dr Heemstra explained.

The results

While there was no simple answer as to which model should be used, Dr Heemstra said that the evaluation has

given the sector a better understanding of the capability provided by these simulators and of the challenges of predicting the spread of bushfires.

"It's given us some really good insights about the limitations of the computer simulation models and some of the cautions that we'll need to have in place in employing and using these models."

While no single simulator performed the best overall, some performed better against particular case studies. These learnings will be used to guide the future use and further development of fire spread simulators.

One of the key recommendations from the report was to develop nationally consistent standards for collecting data from fire events.

"If we come up with a national, consistent standard for collecting data from fires, then we will have a platform within which to test that model. I think it's actually quite achievable that we end up

"This simulator evaluation project is a very important step for us. Rather than just picking up the bright shiny new thing, we've actually undertaken a thoughtful and unbiased evaluation of the models and come up with a better understanding of where we should go forward."

— Dr Simon Heemstra, NSW Rural Fire Service

PHOTO: KEITH PAKENHAM, COUNTRY FIRE AUTHORITY, VICTORIA



Data from the 2015 Wye River fire in Victoria was used to test the performance of the fire spread simulators.

with a nationally consistent dataset," said Dr Heemstra.

Another recommendation is to undertake further testing of the simulators and any future models using BoM's evaluation framework.

"One of the really useful things to come out of this project is that we now have a national framework for evaluating and comparing models into the future," explained Dr Heemstra.

This means that if one of the currently used models releases a new version, it can be tested for accuracy and performance against previous versions. This capability was not previously available in the predictive services space.

A collaborative approach

The BoM, NSW RFS and AFAC, through its Predictive Services Group, all worked together to define the new evaluation methods and framework. Fire agencies from multiple jurisdictions across Australia also played an important role by providing historical data.

"One of the really beneficial parts of this project was the collaborative arrangement with the industry and the Bureau of Meteorology," said Dr

Heemstra. "The Bureau invested a lot in kind and this was a really important partnership." Dr Heemstra added that the BoM's involvement was instrumental in the evaluation's success.

"The Bureau brings a huge amount of experience with evaluating these sorts of programs and software for their forecasting. We've been able to leverage off that quite effectively for the benefit of the emergency management industry. They've delivered way more than what we would have expected."

Dr Heemstra also acknowledged that as well as the fire spread simulator evaluation, other key predictive services projects are underway.

"The whole predictive services space is quite an active area. There's a lot that the AFAC Predictive Services Group has been working on as far as the fire spread models, fire danger ratings, and fire weather [are concerned]. It's an area where there's a lot of new technology and new tools that are becoming available to help us manage fire more efficiently and effectively." ■

The final report can be downloaded from: www.bom.gov.au/research/other-reports.shtml.

HOW THE MODELS STACKED UP



AUSTRALIS
Australis produced simulation outputs similar in quality to other simulators, but was manually operated with a smaller number of sample runs. Further automation of Australis is required to adapt it to larger-scale use, e.g. the use of weather ensemble inputs.

PHOENIX
Phoenix performed relatively well in most case studies. Differences between versions of Phoenix were evident. The evaluation revealed that the current software architecture is not easily configurable for model enhancements.

PROMETHEUS
Prometheus produces good simulations for environments for which there are appropriate fuel mappings. This simulator is based on the Canadian Forest Fire Behaviour Prediction system, which meant that local fuel types had to be mapped to these different prediction equations. As a result, it could only be tested against one of the 10 case studies.

SPARK
The Spark developmental framework performed well against the more mature simulators. It is easily scalable, incorporates new models easily and is based around a more open architecture.

NEXT STEPS FOR NSW REFORMS

With the NSW fire safety reforms now in effect, the next step is recognition of an industry accreditation scheme—and the Fire Protection Accreditation Scheme (FPAS) is first in line.

KEY POINTS

- ◆ The reforms came into effect on 1 October 2017.
- ◆ Until the NSW Government recognises an industry accreditation scheme, the requirements for fire safety practitioners have not changed.
- ◆ FPAS is seeking recognition and will have classes of accreditation to meet NSW requirements.

BY **TOM BICKNELL**

Fire Protection Association Australia

In June, the NSW Government announced a major set of reforms to the state's fire safety regulation and certification system. The new legislation has several important changes, and Fire Protection Association Australia (FPA Australia) believes these changes will provide a template for other states and territories to follow.

The reforms, which came into effect on 1 October 2017, are a response to an independent review of the *Building Professionals Act 2005*, known as the Lambert Review. Conducted by former Treasury Secretary Michael Lambert, the review made a series of recommendations in 2015. One of these was a requirement that fire protection practitioners be accredited as having the necessary competency for the work they were doing, preferably under an existing scheme developed by a professional association. That recommendation in particular represents a big shift for the industry.

"We believe these once-in-a-generation reforms represent a much-needed cultural shift for the industry, but most importantly will improve safety and community confidence in all NSW buildings," said FPA Australia CEO Scott Williams.

Competent fire safety practitioner accreditation

From 1 October 2017, the NSW reforms require fire safety design work and the preparation of annual and supplementary fire safety statements to



PHOTO: SHUTTERSTOCK

The NSW reforms are a once-in-a-lifetime shift for the industry.

be performed by a 'competent fire safety practitioner'.

In line with the Lambert Review recommendation, the reforms include the introduction of a framework to adopt a number of existing NSW Government recognition processes, such as Office of Fair Trading licences or Building Professionals Board registration, as well as industry schemes that accredit individuals as competent fire safety practitioners. The framework has been developed by the NSW Department of Finance, Services and Innovation. Once the government recognises a scheme, individuals accredited by that scheme will make up a register of recognised competent fire safety practitioners. Building owners will then be required to have fire protection work done by individuals on the register.

Between the introduction of the reforms on 1 October and the

recognition of an accreditation scheme, however, the NSW Government has advised building owners to satisfy themselves by other means that the practitioners they select are competent. The NSW Department of Planning and Environment has developed guidelines to help building owners determine who should be considered a competent fire safety practitioner.

In practice, this interim arrangement is very similar to the requirements before the reforms. These required annual fire safety statements to be prepared by a 'properly qualified person', without any guidance as to what this entailed.

Changes to fire safety statements

The reforms will also introduce some changes to fire safety statements, both annual and supplementary. From 1 October, building owners will need to include details of the 'competent fire

safety practitioner' who completed the assessments and inspections. The NSW Government will prescribe standard forms for fire safety statements and certificates that include space for these details, which will be made freely available. At the time of writing, these forms were still being developed.

FPAS recognition

FPA Australia has submitted an application to have the relevant categories of the Fire Protection Accreditation Scheme (FPAS) recognised under the reforms.

"FPA Australia has developed a comprehensive accreditation scheme in FPAS, and we've invested to make sure it's a rigorous, industry-leading system," said Mr Williams. "The scheme is approaching 2,500 accredited individuals, who we believe in time will certainly satisfy the NSW Government's criteria for competent fire safety practitioners."

FPA Australia has been developing new classes of accreditation classes intended to meet the NSW requirements. The new class known as Fire Safety Assessor is reaching completion, and is uniquely tailored to fit the reforms' requirements for

professionals preparing annual fire safety statements. It could also be extended to apply to similar roles in other jurisdictions as part of the national FPAS approach.

Fire protection design work is already covered by the FPAS Fire Systems Design class of accreditation. Fire Systems Design is currently available in three categories: Fire Sprinkler Systems, Fire Hydrant and Hose Reel Systems, and Fire Detection and Alarm Systems. Future categories are being developed in Exit and Emergency Lighting and Passive Fire Protection.

These two classes of accreditation will address the current requirements under the NSW reforms. FPA Australia anticipates that the NSW Government may expand their accreditation requirements in future to cover other areas of fire protection work, including installation, system certification or rectification maintenance. The Association is keeping this in mind as it continues to develop FPAS.

Until the NSW Government recognises FPAS or another industry accreditation scheme, building owners will still be responsible for selecting an individual they deem a competent fire safety

NEW REPORTING REQUIREMENTS FOR NSW BUILDING CERTIFICATION DATA

In another response to the Lambert Review, the NSW Government will introduce a requirement for building certification data to be reported directly to them. The change is aimed at better tracking the compliance of individual buildings, and identifying potential weaknesses in the regulatory system.

Local councils and A1, A2 and A3 certifiers will start reporting data about the buildings they certify to the NSW Government later this year. The reporting will initially be voluntary, but will be made mandatory at a date yet to be announced.

The NSW Government will make available a mobile app, a software API and a secure FTP option to report certification data.

practitioner. FPA Australia has developed guidance materials, including an FAQ and a register of practitioners (see page 15).

FPAS is also receiving endorsement from bodies such as the Owners Corporation Network—the peak industry body for owners and residents in residential strata schemes—which is advising members to look for FPAS-accredited individuals to conduct their fire protection work. ■

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PRIORITIES TO GUIDE HAZARDS RESEARCH

PHOTO: NEW SOUTH WALES STATE EMERGENCY SERVICE



Australia's most significant natural hazard emergency management issues have been drawn up by the sector's leaders to guide research over the next decade.

The new national research priorities will help all involved in emergency management to build safer and more resilient communities.

BY **DAVID BRUCE**

Bushfire and Natural Hazards CRC

Last July, the Bushfire and Natural Hazards CRC launched a set of priorities for national research into natural hazards. Now available online for broader discussion, the priorities arose from national workshops with the emergency management sector that led to their consideration by the peak Australia–New Zealand Emergency Management Committee.

This is the first time such a future-thinking exercise has been undertaken on natural hazards research in Australia. With the annual economic costs of disasters in Australia expected to increase from \$9 bn to \$33 bn by 2050, Bushfire and Natural Hazards CRC CEO Dr Richard Thornton believes that difficult and complex questions must be asked.

"As a nation, we have a moral and economic obligation to mitigate the impact of natural hazards," Dr Thornton said.

"As members of the emergency management sector, we have a responsibility to identify the major issues that need to be addressed to build safer and more resilient communities.

"As members of the research community, we have a responsibility to apply our skills, knowledge and creativity to identifying potential solutions and bringing them to fruition."

The CRC steered the extended process, which began with a review of its entire research agenda when it reached the halfway point in its funding life in late 2016.

"We did this to help people in the sector understand that if they are spending research money or commissioning research, then they can have a look at the priorities that the whole sector has said are important. That allows us all to work together to solve some of those issues rather than have competitive approaches," explained Dr Thornton.

The CRC will now promote these priorities more broadly across the sector, and discuss their potential with funding groups such as the Australian Research Council and National Health and Medical Research Council.

"One thing we did was go out to the broader sector around emergency management and come up with a list of the things critical to the sector from a research perspective," Dr Thornton said.

"We did that by sitting down with about 16 different groups at workshops all around the country covering everything from mitigation, diversity, warnings [and] volunteering, through to the mechanics and physics and meteorology of hazards right through to recovery, picking up important sectors like insurance, urban planning and urban operations.

"We took a broad, whole-of-sector approach to come up with a set of research questions that spell out the most significant natural hazard emergency management issues Australia faces over the next decade."

Four key themes came across consistently at the workshops:

- ◆ shared responsibility and community engagement
- ◆ communicating risk and understanding the benefits of mitigation
- ◆ climate change
- ◆ predicting hazards more accurately, leading to better warnings.

"The first one is around shared responsibility and community engagement," explained Dr Thornton. "[For example], how does the government help communities manage



PHOTO: DAMIEN FORD, NEW SOUTH WALES RURAL FIRE SERVICE

their own risk or understand their own risk? How can government collaborate effectively with communities to break down the silos and build trust?”

“The second major area was about risk communication and understanding the benefits of mitigation. Agencies and governments often struggle with how to communicate risk in a way that is personalised by the community and the individual. The CRC has completed post-event analysis and one of the constant refrains we hear from the public is ‘we knew that this was a risky area to live in, but we didn’t believe it was a risk for us.’ It’s always going to be a risk for somebody else. So, we need to find ways to get beyond that.

“We also found that it is difficult to understand the economics that underpin the benefits of mitigation. We know that to avoid an event is instinctively better than to have to recover from it, but it’s actually a hard economic discussion to have with treasuries across all levels of

government, because it means investing today in something that might not happen for 50 years or more. And you are counting saves and not impacts.

“The third major area was the impact of climate change and how it will change the hazard profiles across Australia. What mitigation should we be doing today and how do we consider potential increases in hazards from climate change? How do we incorporate future climates into operational decisions that includes things like cumulative disasters where hazards become more prevalent, such as two major flood events one after the other?”

“And finally, how do we do predictive services and warnings better—better weather forecasts, flood forecasts, cyclone prediction and fire prediction. How do we then communicate these in ways that are effective as warnings?”

The publication of these priorities is the beginning of a process, not an end. A national discussion within the

emergency management sector has identified themes for research priorities, but this is not intended as either a final or comprehensive list. As new themes and research priorities are identified in coming years, they will be included in the priorities document, and published on the Bushfire and Natural Hazards CRC website.

The CRC has developed a suite of three publications on national research priorities:

1. *National research priorities for natural hazards emergency management – issues, priorities, directions*
2. a summary of workshop outputs supporting the statement on national research priorities for natural hazards emergency management
3. a series of information guides for future research activities, individually themed around a workshop topic.

“We can now say: here are a set of priorities agreed to by the sector. If you want to work on something that is going to make a difference to community safety and to disaster resilience, then here is a set of shared priorities that sets out some of the big questions that you might want to consider” said Dr Thornton. ■

The most significant natural hazard emergency management issues Australia faces have been developed to guide research over the next decade

“As a nation, we have a moral and economic obligation to mitigate against the impact of natural hazards.”

Dr Richard Thornton, CEO, Bushfire and Natural Hazards CRC

Discover the *National research priorities for natural hazards emergency management* at: www.bnhcrc.com.au/nationalpriorities.



NEW GOOD PRACTICE GUIDE FOR FIRE SAFETY IN HOSPITALS

FPA Australia has published a new guidance document to help Australian hospital designers improve fire safety in these vitally important buildings.

BY **DR IAN D BENNETTS**

Skip Consulting Pty Ltd

PETER JOHNSON

Fellow, Arup

STEPHEN KIP

Skip Consulting Pty Ltd

HANK VAN RAVENSTEIN

EMPA

Hospital design faces many complex issues, with fire safety being but one—albeit an important one. The potentially positive impact of building layout and design on patient wellness and recovery is well recognised. Accordingly, modern hospitals are commonly designed to take advantage of modern architectural forms and construction materials to create an attractive healthcare environment. However, great care must be exercised with new materials and concepts to not compromise fire safety.

From a regulatory point of view, the National Construction Code (NCC)

designates hospitals as Class 9a buildings. The NCC is a performance document that requires buildings to meet a set of performance requirements. These performance requirements can be met through the the relevant prescriptive requirements in the NCC, termed the 'Deemed to Satisfy' (DtS) Provisions, or by means of an appropriately justified performance solution based around a more fundamental assessment of hazard and risk. Many designs do not easily fit within the DtS Provisions given their specialised nature. To do so could result in a lower level of safety or a loss of important function, or be prohibitively expensive.

This general need for specific performance-based design for hospitals is acknowledged by the Department of Health and Human Services (DHHS) of Victoria, which has developed the *Capital Development Guidelines – Series 7 Fire Risk Management Policy and Procedures, 2013*. Designers must consider this guideline in relation to any DHHS building that provides bed-based accommodation. For hospitals, the relevant documents are:

- ◆ 7.1 Fire risk management policy and procedures
- ◆ 7.2 Engineering guidelines
- ◆ 7.6 Hospitals.

This Guideline recognises that such buildings must be designed and managed from a risk perspective. This applies to both the building's design and its subsequent operation and management. The design of the building must be documented by means of a fire engineering report (FER) developed in accordance with the International Fire Engineering Guidelines¹. The FER should also contain a fire safety strategy. The strategy should explain the design philosophy from a risk perspective (causes, fire events, potential consequences and hazards) and include a clear statement of the essential safety measures (fire) and the associated maintenance and management requirements.

The fire safety strategy must also to be included within a fire safety handbook, which forms the basis for subsequent audits of the building throughout its life. The fire safety

Fire safety engineers, building surveyors, and any other designers who have to address fire safety design issues in hospitals will benefit from the *Fire safety in hospitals* guidelines.

engineer responsible for the design of the building must be involved in the development of the Strategy.

From an overseas perspective, the UK Department of Health has developed a comprehensive set of documents that apply to all key safety aspects of healthcare premises in the UK. HTM 05 applies to fire safety with HTM 05-02: *Firecode*², providing specific guidance in the fire safety design of new premises and major new extensions to existing premises. Should it not be possible to meet the prescriptive requirements of HTM 05-02, a fire engineering design may be undertaken in accordance with HTM 05-03: Part J *Guidance on fire engineering of healthcare premises*³. Irrespective of the design approach used, all healthcare buildings in the UK are the subject of a fire risk assessment that is to be undertaken in accordance with HTM 05-03 Part K: *Guidance on fire risk assessments in complex healthcare premises*⁴. Reading and understanding the key principles in these UK documents can assist designers in their thinking and provide some insight into risk and safety issues for considerations in the design of Australian hospitals.

Similarly, US standards offer other insights into hospital design and fire safety. NFPA 99: *Health care facilities code*⁵ provides guidance for risk assessments associated with equipment and infrastructure in hospitals. It covers issues such as medical gas storage and distribution, electrical systems, security, emergency management and fire protection. The NFPA Code also gives prescriptive solutions relevant to US building codes and standards.

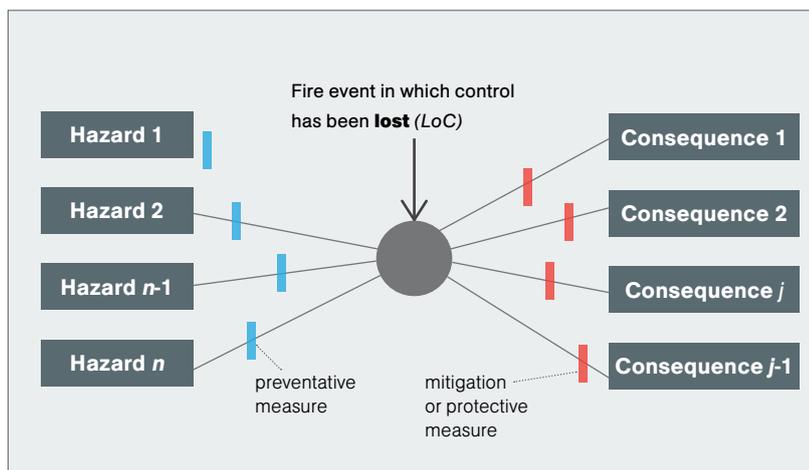
Guidance document

A guidance document entitled *Fire safety in hospitals – a guide for designers* has been prepared and will be published shortly by FPA Australia as a good practice guide for use by Australian hospital designers.

The document will give designers a better understanding of the key areas of hospital operation and how hospitals function, to help designers improve fire safety and hospital design. Fire safety engineers and building surveyors, as well as all other designers who have to address fire safety design issues, should benefit from the important principles and practices provided by the Guide.

The Guide highlights critical building and operational characteristics that set hospitals apart from other buildings, in terms of their design objectives and potential design solutions.

The traditional prescriptive fire safety requirements are highlighted, as well



Basic cause–consequence modelling can help with building design.

as key principles of design where a risk-informed, performance-based design approach is adopted that involves fire safety engineering rather than a straight DTS approach.

This means to test such performance-based designs to ensure adequate levels of fire safety.

Approach

Based on the full range of information sources, which included previous incidents, fire statistics, relevant test data and research outcomes, an analysis was undertaken to derive key findings, which have been used to provide the context for development of fire engineering design principles. The Guide also aims to provide a better understanding of hospital buildings and their operation, and is based on the recognition that fire is just one key hazard, but that other hazards, such as spread of infection, and hospital security, can be as significant and need to be taken into account in an integrated design and management approach.

The guide encourages the use of a risk-based approach to assess cost-effective design options and identify relevant fire scenarios and design fires. It recommends the use of basic cause–consequence modelling, which forces a designer to systematically consider the hazards (ignition sources, fuel loads, work practices) in given parts of the hospital and whether a 'loss-of-control' fire event could occur in the absence of preventative (and mitigation) measures. This approach also encourages designers to systematically consider the likely effectiveness of various mitigation and preventative measures and their respective effects on consequences.

Conclusions

Hospitals are complex buildings with fire protection objectives beyond just life safety, although the safety of patients, staff and visitors is paramount. Designers need to understand the functionality of

all hospital areas, and be aware of the special fire hazards and risks in these buildings. Hospitals lend themselves to a risk-informed fire engineering approach for fire safety design, and in Victoria need to comply with the DHHS *Capital development guidelines Series 7 Fire Risk Management*.

An adequate fire-safety engineering approach to developing a Performance Solution will be facilitated by early involvement of the fire-safety engineer in the design process. That will allow them a sound understanding of the proposed functionality, construction details and fire hazards, and an ability to foresee 'loss of control' events, as developed through a thorough understanding of hospital buildings in conjunction with cause–consequence modelling.

Therefore, designers must understand and recognise that hospital buildings must be designed and managed from a risk perspective informed from a fire-engineering perspective. This applies to both the design of the building and its subsequent operation, management and life cycle costings for maintenance. ■

Download the full Good Practice Guide at: <https://goo.gl/d6KHQ1>.

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PHOTOS: DAVID BRUCE, BUSHFIRE AND NATURAL HAZARDS CRC

LEARNING LESSONS FROM RESEARCH INSIGHTS: BLACK SATURDAY

The 2009 Black Saturday bushfires made history as one of Australia’s deadliest and costliest peacetime tragedies. A new industry guideline helps us learn from this tragic event.

BY **BRENDA LEAHY**

AFAC

Human endurance and the capabilities of emergency service providers were tested by the catastrophic Black Saturday fires in Victoria. The bushfires claimed 173 lives, left 400 injured and resulted in millions of dollars of estimated damages and losses. Years on, the survivors and their communities continue with the emotional, social, financial, structural and physical recovery.

So what can be learned from Black Saturday that will help others in bushfire-prone communities prepare for the brutal reality of catastrophic fire?

In addition to implementing the

wide-ranging recommendations of the Victorian Bushfire Royal Commission, Australia’s fire and land management agencies have addressed these questions by drawing on lessons identified from research into the accounts of Black Saturday’s survivors and the experiences of its deceased.

Using AFAC’s national collaboration process, the agencies have captured their conclusions into an industry guideline: *Community safety messaging for catastrophic bushfires: lessons learnt from Black Saturday bushfires, Victoria 2009*. The guideline is designed for use by community safety and engagement practitioners in AFAC member agencies.

The guideline was developed by a

project team from AFAC’s Community and Engagement Technical Group (CETG). AFAC’s Director, Information and Community Safety, Amanda Leck, said the process involved extensive rounds of review, consultation and drafting, with the team negotiating consensus on factors such as the guideline’s role, scope, content and format.

“CETG members distilled conclusions from the research insights into major learnings to guide key messaging for communities in the lead up to, during and after catastrophic bushfire,” she explained.

The document expands on the major learnings of the Bushfire CRC 2014 report, *Lessons learnt from the Black Saturday bushfires:*

A team of researchers conducted an investigation following the 2009 Black Saturday bushfires in Victoria.



information for fire agency managers of community safety. The finished guideline was approved by the AFAC National Council as doctrine for use by member agencies in late 2016.

Today, practitioners across all jurisdictions use this pivotal document to guide development and implementation of bushfire education programs as well as in-house training. It provides practical, consolidated information to help local fire authorities communicate the report's findings to communities and improve fire safety. Each set of key messages is accompanied by the related major learning from the research report, along with more detailed information about the context of each issue, including a real-life example from the accounts and experiences of Black Saturday.

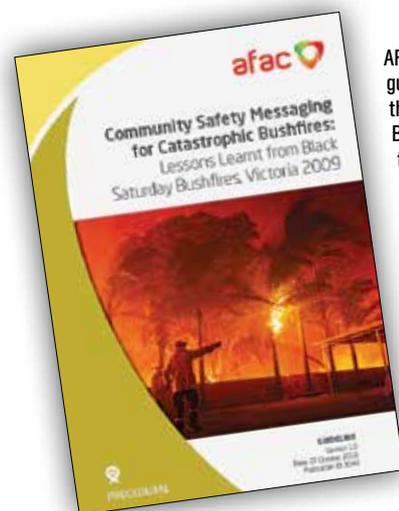
The core learnings cover the harsh reality of bushfire as recreated from the last minutes of the deceased and recalled by survivors. The physical and emotional aspects of confronting catastrophic bushfire are covered, including anticipating and being prepared for worst-case scenarios, such

as planning last-resort exit routes and places of refuge.

The latest AFAC research utilisation case study describes how lessons based on the research findings from a 126-page report were translated into a practical, 12-page guidance resource for community engagement practitioners nationally. The case study identifies the factors critical to the project's success, foremost of which was the collaboration through AFAC, a shared sense of commitment to learn from the research, and trusting relationships built between the researchers, end users and relevant authorities to carefully use lessons identified from the Black Saturday research.

"It's important that [the guideline] has been jointly developed by those practising in the field," said Sandra Barber, the project leader.

"Being based on research evidence, assessed by the CETG and having the backing of AFAC behind it, gives it strength, weight and relevance," added Peter Middleton, of Tasmania Fire Service. ■



AFAC's new guideline shares the lessons from Black Saturday to improve preparedness in other bushfire-prone communities.

The case study can be downloaded at www.afac.com.au/initiative/research. For further information on this case study, contact AFAC Director of Research and Utilisation Dr Noreen Krusel via email at: noreen.krusel@afac.com.au.

FIRE PROTECTION INDUSTRY AWARDS GROW IN SECOND YEAR

The second year of the Fire Protection Industry Awards will be presented at a gala dinner on 9 November, where more than 200 professionals from across Australia's fire protection industry are expected to celebrate the industry's best.

Last year's inaugural event grew out of the Fire Protection Association Australia (FPA Australia) Member Awards, which have been presented at the Fire Australia Conference since 1996.

"The new Fire Protection Industry Awards are for both members and non-members," said FPA Australia's Engagement and Events Manager, Carmen Quinn.

"The Awards are designed to recognise and reward those who display a professional standard of commitment, excellence and contribution to the Australian fire protection industry. They're the only awards dedicated to the industry."

Recognition of those who have dedicated themselves to the industry



and improving fire safety outcomes is important, according to David Isaac, winner of the AV Viscogliosi Outstanding Service Award at the Fire Protection Industry Awards 2016.

"The recognition of their work by issuing an award is definitely productive," said Mr Isaac. "It stimulates activity within an organisation, it stimulates activity external to an organisation. I think overall it's a very good health check."

The award includes four categories judged by an independent panel, and two presented by the FPA Australia Board. ■

FIRE PROTECTION PROJECT OF THE YEAR –NEW IN 2017 (TWO SIZE CATEGORIES)

Presented in two size categories to projects of under and over \$1 M, this award recognises outstanding management and administration of a fire protection project.

BARRY LEE TECHNICAL EXCELLENCE AWARD

This award recognises outstanding technical contribution to the Australian fire protection industry.

HARRY MARRVATT COMPANY OF THE YEAR AWARD (TWO SIZE CATEGORIES)

Two categories are presented, to companies of 1–49 employees and 50 or more. The award recognises companies that demonstrate an outstanding commitment to the Australian fire protection industry.

YOUNG ACHIEVER AWARD

This award recognises the outstanding achievement of young leaders in the Australian fire protection industry.

MERITORIOUS SERVICE AWARD

This award is presented by the Board to FPA Australia members who have made a significant contribution to the Association.

AV VISCGLIOSI OUTSTANDING SERVICE AWARD

This award recognises excellence for outstanding service to fire protection. The award was established in honour of the late Tony Viscogliosi.



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Q&A WITH SOUTH AUSTRALIA STATE EMERGENCY SERVICE'S CHIEF OFFICER CHRIS BEATTIE



BY **STUART ELLIS**

Chief Executive Officer, AFAC

Can you tell us a little about South Australia State

Emergency Service (SASES) and the nature of the work the agency does?

SASES is a volunteer-based organisation that provides an emergency response service across SA. It comprises approximately 1600 volunteers, 65 depots and six community response teams, supported by around 63 full-time equivalent staff. Our SES units respond to floods, storms, general and technical rescues, searches, maritime emergencies and road crash rescues. Our volunteers also provide significant operational support to police, the Country Fire Service (CFS) and the Metropolitan Fire Service (MFS). SASES maintains specialist capabilities, including dog search, impact assessment, staging area and base camp management teams. SASES volunteers provide around 50 per cent of the state's marine rescue capability (blue water, riverine and lakes) and support six non-government marine associations in SA.

SASES have specific responsibilities regarding heat. Can you tell us about your work during major heat events?

Following an extreme heat event in January–February 2009, SASES was appointed the state's Hazard Leader and Control Agency for heatwaves, and led the development of a heatwave warning and management system for the state. The system involves the following interventions:

- ◆ provision of general heat health advice before summer
- ◆ biennial heat plans, reviewed by relevant government and non-government agencies and meeting of all agencies before summer to discuss coordination issues
- ◆ public alerts and advice through media and other channels
- ◆ community engagement with those most vulnerable, including new visitors to SA and support calls through the Telecross REDi service

- ◆ a centralised monitoring system for emergency, ambulance and other clinical response capabilities in the health sector.

SA has limited resources. What kind of interoperability is in place between emergency services in the state to maximise capability?

SA's emergency management agencies are well connected and regularly respond in direct support of one another. During major storm events, we often call upon MFS, CFS and the Department of Environment, Water and Natural Resources to provide strike teams to assist with local storm and flood operations. This is underpinned by an agreement by all SA agencies to adopt the state's Common Incident Command and Control System, which draws heavily on the Australasian Inter-service Incident Management System. The arrangements for interstate assistance have served SASES well over the years and we regularly deploy taskforces and strike teams interstate. In recent years, we have been very grateful for support from Victoria and WA SES, as well as SA CFS.

You have been in this role for six years. What do you find most satisfying about it?

SASES is blessed with first-class emergency first responders and support staff. Our people are committed, hardworking and regularly put themselves in harm's way to assist the community during times of crisis. As the operational head and CEO of SASES, I'm responsible for the performance of the agency. I gain immense professional satisfaction from leading SASES' strategic planning, performance, reporting, governance, budget and development of culture. Some of my immediate priorities for SASES include increasing volunteer numbers through recruitment, retention and volunteer-service model initiatives; enhancing readiness through training; and improving community resilience to extreme weather events.

Climate variability and longer-term trends, as indicated by the Bureau of Meteorology, are changing SA's hazard profiles with clear implications for all emergency management agencies. These changes will have profound

implications for SA communities and the capability requirements of SASES.

Growing capability over the medium to longer term is a key priority, and seeing new capabilities implemented makes me feel like everyone's efforts are so worthwhile. It's got to be one of the best jobs in the world. ■



“SASES is blessed with first-class emergency first responders and support staff. Our people are committed, hardworking and regularly put themselves in harm's way to assist the community during times of crisis.”

Chris Beattie, SASES



During the 1930s, automatic sprinklers were installed throughout Clyde Girls' Grammar School in Woodend, Victoria. This is believed to be one of the first sprinkler-protected schools in Australia.

OUR LADY OF THE ANGELS SCHOOL FIRE TRAGEDY—1958

The fire at Our Lady of the Angels school started in the basement and quickly spread to the first floor, trapping many students inside their classrooms.

BY **BARRY LEE, OAM**

On 1 December 1958, shortly before classes were due to be dismissed for the day, a fire broke out at the Our Lady of the Angels school on Chicago's West Side.

The primary school was operated by the Roman Catholic Archdiocese of Chicago, and served some 1,600 students. A total of 92 pupils and three nuns died when smoke, heat and toxic gases cut off their normal means of escape through corridors and stairways. Many more were injured when they jumped from first-floor windows—because the building had a raised basement, these were almost as high as a second floor would be on level ground. The fire started in rubbish in the

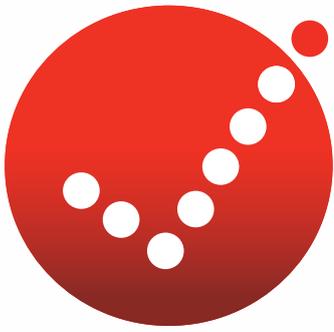
basement, and spread rapidly up an open stairway into a first-floor corridor, trapping students in their classrooms. Fire devastation was confined to the first floor of the north wing, which had been remodelled several times over the years. The school complied with the then-applicable (1958) local fire codes, but had no automatic sprinklers, automatic fire alarm, direct alarm connection to the fire brigade, fire-resistant stairwells or fire doors from stairwells to the first-floor corridor. The interior finish was largely combustible.

Discovery and reporting were delayed—so, therefore, was the fire brigade response. The ruins were dismantled in 1959 and a new Our Lady of the Angels school was constructed to comply with the latest fire safety

standards. Automatic sprinklers were installed throughout. Ordinances to strengthen Chicago's fire code and new amendments to the Illinois state fire code were passed.

The National Fire Protection Association estimated that about 68 percent of all US communities inaugurated and completed fire safety improvements after the Our Lady of the Angels fire. One of these improvements was an increased number of legally mandated fire drills throughout the academic year.

Within two years of the Chicago tragedy, automatic sprinklers, automatic detection and alarm systems, periodic fire drills and improved housekeeping practices were adopted in thousands of US schools. ■



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BY IAN FINDLAY

Technical Coordinator, FPA Australia

STANDARDS AUSTRALIA

FP-002 Fire detection and alarm systems

AS ISO 7240-6 (CO fire detectors) has now been published. Draft Amendment 1 to AS 1670.1 has been through public comment while the draft amendment to AS 1670.4 and draft revisions of AS 1670.3, AS 4428.6 and AS 1603.11 and AS 1603.17 continue to be worked on.

FP-004 Automatic fire sprinkler installations

The issues around the requirements for covered balconies have been resolved and the revision of AS 2118.1 was published in September. Note that the Australian Building Codes Board (ABCB) have highlighted that an out-of-cycle amendment to the National Construction Code (NCC) is planned for early 2018, and a reference to this revision of AS 2118.1 is intended to be part of the amendment.

FP-008 Fire pumps and tanks

The draft revision of AS 2304-2011 *Water storage tanks for fire protection systems* has gone through public comment and the committee is now reviewing that comment.

FP-009 Fire hydrant installations

The revision of AS 2419.1 has been through the combined procedure and is expected to be published later this year. Unfortunately, it is unlikely to be referenced in the NCC 2019 as it would need to go through a regulatory impact statement process, which is not possible in the timeframe for the NCC 2019. However, Standards Australia is working with the ABCB and AFAC on how it can be implemented.

FP-011 Special hazard fire protection systems

Standards Australia continues to work on resolving some issues before releasing the revision of AS 14520 (recombined and redesignated AS 4214) to public comment.

FP-018 Fire safety

FP-018 is working through the public comment received on the draft 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 draft revision of AS 3959 *Construction of buildings in bushfire-prone areas to public comment*.



LG-007 Emergency lighting in buildings

LG-007 has resolved the public comment for AS/NZS 2293 Parts 1 and 3 (*Emergency escape lighting and exit signs*) and is currently working through the public comment for Part 2. These will likely need to go to combined procedure as sections are being moved or removed from these standards.

TECHNICAL ADVISORY COMMITTEES

The most recent round of TAC meetings was held in July. However, TAC/20 and TAC/T did not meet this round. All TACs are also now trialling FPA Australia's new SPARK online community and discussion forum.

TAC/1 Maintenance of fire protection systems and equipment

The draft document on routine servicing of aspirating smoke detectors (ASDs) has been discussed at TAC/2 and is now being progressed by TAC/1 as a Position Statement instead of a Technical Advisory Note as a result of their feedback.

TAC/2 Fire detection and alarm systems

Along with reviewing the document on ASDs from TAC/1, TAC/2 continues to work on its own technical documents as well as FPA Australia's contribution to FP-002 projects.

TAC/3/7 Portable and mobile equipment

TAC/3/7 is continuing its work on a possible revision of AS 2444 (and associated standards) with detailed feedback from TAC/3/7 members and the wider FPA Australia membership reviewed at the recent meeting.

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

Detailed discussions were held on the progress of the AS 2118.1, AS 2304 and AS 2419.1 revisions as well as possible new Standards Australia revision projects. Several technical issues were also discussed, as was how to restart work on the stalled Good Practice Guide on hydrant testing and commissioning.

TAC/11/22 Special hazards fire protection systems

TAC/11/22 continues to work with regulators to address environmental concerns regarding firefighting foams and keep abreast of other developments with the National Industrial Chemicals Notification and Assessment Scheme reforms, Australian Standards and International Organization for Standardization (ISO) standards.

TAC/17 Emergency planning

TAC/17 continues to work on a variety of projects including monitoring and contributing to the development of Amendment 2 to AS 3745-2010. They also discussed technical issues regarding emergency planning in different states and settings.

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

TAC/18 and TAC/19 continue to work on several projects, including good practice guides on access panels and fire stopping systems. Technical issues experienced in the field were also discussed in detail.

FIRE PROTECTION INDUSTRY AWARDS GALA 2017

9 November 2017

Metropolis, Southbank, Melbourne

The Fire Protection Industry Awards Gala 2017 will recognise and award businesses and individuals leading the professional standard of commitment, excellence and contribution in the fire protection industry.

The evening will be led by TV personality and sports authority Stephen Quartermain, and entertainment will be provided by Melbourne band BigCityBeat.

Tickets are available at:
www.fireprotectionawards.com.au.



LESSONS MANAGEMENT FORUM

14–15 November 2017

State Library of Victoria Theatre, Melbourne

Registrations are now open for a two-day Lessons Management Forum in Melbourne.

The forum will bring together knowledge and lessons management practitioners to share good practice, learnings and innovations. It is open to everyone, including those that are interested in the area, or those that are moving into this area.

The event will provide a face-to-face networking opportunity for the recently established network of practitioners working in the knowledge and lessons management area. New members are encouraged to join.

For more information and to register, visit: www.afac.com.au/events.



FIRE AUSTRALIA CONFERENCE AND TRADESHOW 2018

1–3 May 2018

Brisbane Convention and Exhibition Centre

The Fire Australia Conference and Tradeshow is heading to Brisbane in 2018. This premier event in fire and life safety will involve a three-day program and the largest trade show for fire protection in Australia.

For more information, visit:
www.fireaustralia.com.au.

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FIRE

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Tom Bicknell

Tom Bicknell has joined Fire Protection Association Australia as the Communications Manager and the new joint editor of *Fire Australia* magazine. Tom joins the Association with 10 years of experience in communications and market research, working with industry and government in primary industries, research and higher education.



Tom Bicknell

Michael Rumsewicz

Michael Rumsewicz has left the Bushfire and Natural Hazards CRC after four years as Research Director. Michael oversaw the development and implementation of the research program, and more recently the refresh process. His energy, dedication, insight and advice will be missed around the CRC.



Michael Rumsewicz

John Bates

John Bates has been appointed to the role of Research Director at the Bushfire and Natural Hazards CRC. John joins the CRC from his previous role as Director of the Australian Institute for Disaster Resilience. Prior to joining the Institute, John had an extensive career in business development and research utilisation in academic organisations.



John Bates

David Youssef

Melbourne Metropolitan Fire Brigade (MFB) Deputy Chief Officer David Youssef has resigned after more than 30 years in the fire service. David was Deputy Chief Officer for six years and has left the MFB to pursue new opportunities. We wish him well in his new endeavours.



David Youssef

Paul Stacchino

Paul Stacchino has resigned from his position as Acting Chief Officer at the MFB. Paul leaves MFB after 35 years in the industry working across MFB and Country Fire Authority, Victoria. We wish him well in his new endeavours.



Paul Stacchino

Wayne Gregson, APM

Department of Fire and Emergency Services Commissioner Wayne Gregson has stepped down from his position leading the West Australian response agency. Wayne was appointed in late 2012, and led a major reform program, focusing on supporting frontline services and increasing transparency. Wayne will also retire from his position as a Director of the AFAC Board where he served as Treasurer since 2014. We wish him well in his new endeavours.



Wayne Gregson

Gavin Freeman

Gavin Freeman has been appointed as Deputy Chief Officer (Urban) at Country Fire Authority (CFA), Victoria. Gavin comes to CFA with a wealth of knowledge and considerable operational and managerial experience. He previously served as Deputy Chief Officer at Tasmania Fire Service since 2010. Congratulations Gavin.



Gavin Freeman

Darren Klemm

Darren Klemm has been appointed to lead the Department of Fire and Emergency Services WA following the retirement of Commissioner Commissioner Wayne Gregson. Darren has more than 27 years' experience in fire and emergency services, previously serving in South Australia. In taking up this position Darren joins the AFAC National Council. Congratulations, Darren.



Darren Klemm

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