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Fire AUSTRALIA



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About Fire Australia

Fire Australia is a joint publication of Fire Protection Association Australia, the Australasian Fire and Emergency Services Authorities Council 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 fire research organisations. Fire Australia is produced quarterly and distributed throughout Australia and New Zealand.

Editorial submissions are welcome and can be sent to joseph.keller@fpaa.com.au.

For more details on submitting a contribution, please contact the editors.

Fire & Rescue NSW conducted fire behaviour tests at CSIRO laboratory to better understand the fire risks and hazards associated with hoarding.



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ADDING NATURAL HAZARDS TO BUSHFIRE— A SEEMINGLY SIMPLE TASK?



By Dr Richard Thornton
 Chief Executive Officer, Bushfire and Natural Hazards CRC



PHOTO: CRA COMMUNITIES AND COMMUNICATION

We are now right in the middle of summer; the severe weather season. Across the country, the majority of our destructive bushfires, floods, cyclones and storms occur in the few months either side of the New Year.

As the poem says, we are a country of droughts and flooding rains. While fire often grabs the headlines, the environment that the Bushfire and Natural Hazards CRC finds itself in is a world away from that which its predecessor, the Bushfire CRC, had to deal with. The conceptually simple addition of all natural hazards to the research program has significant implications when it comes to the breadth of players involved.

Our gaze now covers the work of the United Nations and broad international treaties, through to local government and non-government organisations, power and water utilities and health organisations, to ensure that every person in every community is as safe as can be from natural hazards.

A primary role of the new CRC is to act as a research and coordination body for natural hazards research in Australia and New Zealand. This is research that makes a difference, backed with \$47 million over eight years from the Australian Government. This research is addressing the highest priority needs of our partners. It funds the best researchers from around the country and links them in a substantive way to the end users of their work, to ensure it is adopted to benefit Australian and New Zealand communities.

The CRC is lifting its profile as the research begins. Our recent conference (see *Fire Australia* Spring 2014, pages 28–29), jointly run with AFAC in Wellington, New Zealand, saw us showcase our research program to a broad audience of industry, research and community members. More recently, we have held several successful public and industry forums. Our second Research Advisory Forum took place in Melbourne in early December 2014 (see page 8), and we marked International Day for Disaster Risk Reduction on 13 October 2014 with a public forum in Canberra (see page 8). Both were well

attended, with plenty of great discussions. An event that was quite a bit different was Mercury Rising: Extreme Bushfires, held in Adelaide in late September 2014 in conjunction with RiAus and our South Australian partners, the Country Fire Service and Department of Environment, Water and Natural Resources. Hundreds of people from around the country tuned into a live stream of experts discussing bushfire science (see page 10).

The Bushfire and Natural Hazards CRC is now a partner with FPA Australia and AFAC in *Fire Australia*, building on the legacy of the Bushfire CRC, which provided the fire, land management and emergency service industry with a capability that otherwise would not have been possible. We are proud to be able to take up the running from here.

Our broad research program is now underway, with a multi-disciplinary approach to the major national issues across the natural hazards spectrum. The aims are ambitious. The potential consequences are large for communities and businesses affected by natural hazards. But we are up for the challenge. *Fire Australia* will continue to keep you informed of our progress. ■



PHOTO: JO JOHNSON, NEW ZEALAND FIRE SERVICE

The CRC's broad research program covers earthquake, bushfire, cyclone, flood and storm.

AFAC15 CALL FOR ABSTRACTS NOW OPEN

The call for abstracts for the 2015 AFAC and Bushfire & Natural Hazards CRC conference is now open.

To be held at the Adelaide Convention Centre on the banks of the River Torrens, the conference will include a week of activities, with the Research Forum and two-day conference running from Tuesday 1 to Thursday 3 September 2015. A number of professional development opportunities will be held on Friday 4 September.

The theme for this year's conference is *New Directions in Emergency Management*. The approach to emergency management is rapidly evolving and with it the need for better knowledge and understanding. Driven in part by the

escalating cost and complexity of major incidents, the emphasis is shifting towards a holistic view that encompasses research, readiness, risk reduction, response and recovery. At the same time, our emergency agencies are being comprehensively reformed to improve their effectiveness before, during and after major events.

This conference will provide an opportunity for participants to discuss and share new approaches in an all-hazard emergency management environment. This includes working together to examine sector reform, the challenges and opportunities of a 'shared responsibility', and seeking new and engaging ways to partner with the community, researchers and the sector to foster and build disaster resilience.



Building on this theme, the program will address six core topics:

1. Supporting our people—challenging our culture
2. The science and modelling of hazards
3. The challenge of information management
4. Building community and disaster resilience
5. Working together—reform of the EM sector
6. Shared responsibility.

The closing date for abstract submissions is Monday 16 February 2015. To submit an abstract, or for more information about speakers, registration and post-conference development sessions, visit www.afac.com.au/conference.

FINDINGS FROM THE OCTOBER 2013 BUSHFIRES IN NSW

Resident experiences of the October 2013 bushfires in the Blue Mountains, Southern Highlands and Port Stephens areas of New South Wales have been analysed in a report by the Bushfire and Natural Hazards CRC and Bushfire CRC.

Following the bushfires, the New South Wales Rural Fire Service (NSWRFS) commissioned both CRCs to conduct community-focused research in a number of fire-affected communities.

Researchers conducted 194 detailed interviews and an online survey of 775 people. The online survey was targeted to the three areas, but open more broadly to fire-impacted areas in NSW.

View a summary of both aspects of the research, and in-depth reports, at www.bnhcrc.com.au.

NSWRFS Commissioner Shane Fitzsimmons said the research will deliver

a range of benefits to the RFS.

"We are proud to contribute to the national research agenda and contribute

to the bank of research and knowledge around bushfire preparation and response," Commissioner Fitzsimmons said.



Partnerships with fire agencies such as the NSWRFS are crucial for research.

FPA AUSTRALIA ANNOUNCES NEW BOARD OF DIRECTORS

A new Board for FPA Australia was announced at the Annual General Meeting on 11 November 2014. Reappointed for a new term were Trevor Voevodin, Chris Orr and Graeme Thom, while new Directors Bill Lea, Rhondel Johannessen and Alf Pelliccione were appointed.

At the Board meeting immediately following the AGM, the Board Executive was decided, with Trevor Voevodin continuing as National President, Chris Orr

as Senior Vice President, Graeme Thom as Junior Vice President and Bill Lea as Treasurer.

In addition, it is with sadness that the Association announces the retirement of Peter Johnson from the Board of Directors. Mr Johnson has had a long involvement with fire protection in Australia and internationally, spanning almost 50 years. Mr Johnson had served on the Board of FPA Australia since 2000, was president

from 2005–08, and is an Honorary Life Member. FPA Australia extends its warmest thanks and congratulations to Mr Johnson for his exemplary service to the Board, the Association and the Australian and international fire protection industries, and wishes him all the best for the future as he continues as a Director of the Global Consulting Sector Board at Arup, leading the company's international fire engineering business.

FPA AUSTRALIA FEATURED ON THE PROJECT

FPA Australia was recently featured on Network 10's *The Project* regarding safety of apartment buildings after a fire caused extensive damage to a high-rise in Melbourne's Docklands.

More than 500 people were evacuated from the 20-storey high-rise apartment building as the fire broke out, damaging at least seven floors. The blaze was believed

to have started in an air conditioning unit on the balcony of a second-floor apartment in the La Trobe Street building about 2.30 am. The damage to the building is estimated at well in excess of \$2 million.

Matthew Wright, Chief Technical Officer/Deputy CEO said the incident represented a positive outcome with all residents evacuated safely and sprinkler

heads inside the building operating, helping to protect people and property.

The incident highlights the importance of vigilance for residents of apartment complexes, both in understanding the emergency exit procedures in their building and in taking notice of fire alarms when they are sounded.

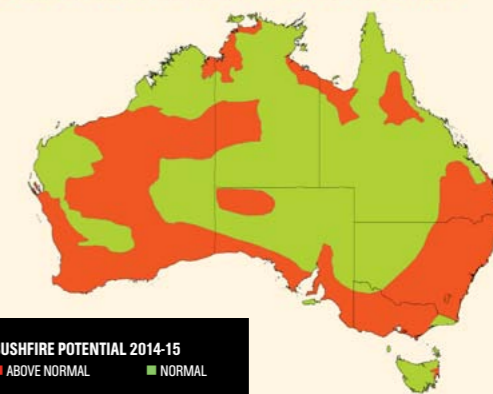
The fire is yet another example of why it is critical that trained and competent persons are used to inspect, test and maintain the life-saving fire protection systems and equipment so they can operate as intended when needed.

View the story broadcast on *The Project* on FPA Australia's YouTube Channel.

DRY WEATHER SPARKS BUSHFIRE OUTLOOK UPDATE

Across south-eastern Australia, spring 2014 was unseasonably dry, and with a hot and dry summer, the Bushfire and Natural Hazards CRC, assisted by AFAC's Fire Weather Technical Group, released an updated bushfire seasonal outlook for 2014–15 covering Victoria, South Australia and Tasmania. The November update to the Southern Australia Seasonal Bushfire Outlook can be accessed at www.bnhcrc.com.au. This new edition, released as *Hazard Note* 003, replaces the previous Outlook for these three states, published as *Hazard Note* 002 in September 2014.

Southern Australia seasonal bushfire outlook 2014–15: November update



INDUSTRY CAPABILITY—EVERY DAY

Today, like most days, fire and emergency services will attend on average 2,000 incidents and emergencies across the country.

On 1 December 2014, the first day of summer, The Honourable Michael Keenan MP, Federal Minister for Justice launched "Every Day" at Parliament House in Canberra. The publication highlights the work of fire and emergency services workers who protect communities, help people, and save lives every day.

"We have a significant national capability with 288,000 fire and emergency service personnel nationally, made up 34,000 paid and 254,000 volunteers," said Stuart Ellis, CEO of AFAC.

"Our workforce is three times the size of the Australian Defence Force (ADF) but this is not widely recognised by our community as fire and emergency service agencies are the responsibility of states and territories, and services delivered locally through the 31 member

agencies that come together as a national council through AFAC," Mr Ellis said.

"On more occasions every year, fire and emergency services are supporting each other across state borders. It is when we work together to combat major bushfires such as the Black Saturday fires in Victoria or major floods like Queensland experienced in 2011, that we clearly identify the significant national capability that Australia has to protect communities from natural disasters and other emergencies."

The publication provides an insight into the work the sector undertakes. Traditionally the focus was on reacting to emergencies. Today, the priorities are working proactively and collaboratively with communities to minimise risk; developing and delivering response capabilities; and providing relief and recovery services.

"As summer progresses, a time when we often see an increase in natural



Jordan Kerr, Minister Michael Keenan and Stuart Ellis at publication launch.

disasters such as storms, bushfires and floods, the Australian community should be reassured that we have a very large workforce that is trained and ready to protect communities, help people and save lives, every day," Mr Ellis said.

Access the *Every Day* publication online at www.afac.com.au

PUBLIC EVENT MARKS INTERNATIONAL DAY FOR DISASTER RISK REDUCTION

Samantha Chard, Assistant Secretary Emergency Management Policy at the Attorney-General's Department, speaks at the forum.



Monday 13 October 2014 was the International Day for Disaster Risk Reduction. To raise awareness the Bushfire and Natural Hazards CRC held a free public forum in Canberra. The forum featured a panel of speakers who explored Australia's contribution to natural disaster risk reduction at home and in our region.

All talks were filmed, with replays and an overview available at www.bnhcrc.com.au.

The panel featured:

- Samantha Chard—Attorney-General's Department—Assistant Secretary Emergency Management Policy

- Dr Helen James—Australian National University—specialist in Asian disasters, governance and sustainable development
- Andrew Coghlan—Australian Red Cross—National Manager, Emergency Services
- Professor Stephen Dovers—Australian National University—Director of the Fenner School of Environment and Society.

The event was held at University House at the Australian National University, with 60 people attending and participating in a lively question and answer session.

The forum drew on the perspectives of

researchers, academia, government and NGOs, exploring the challenges we face in preparing for and responding to natural disasters.

The CRC will hold an event each year on International Day for Disaster Risk Reduction.

SCIENCE ON SOCIAL MEDIA
 For all the latest on the research of the Bushfire and Natural Hazards CRC, including regular news, research insights and events, make sure you 'Like' BNHCRC on Facebook and follow on Twitter.

[f](#) [t](#)

PARTNERS GET RESEARCH UPDATE

Partners in the Bushfire and Natural Hazards CRC got a progress update on many of the research projects at the Research Advisory Forum in Melbourne in early December 2014.

Held at RMIT University, the forum saw project leaders and researchers brief senior management of CRC partners on the status and progress of the research. Research clusters that presented included:

- coastal management
- monitoring and prediction
- next-generation fire modelling
- hardening buildings and infrastructure.

The two-day event also allowed in-depth discussion between researchers and end users on research progress, directions and potential utilisation outcomes—vital at all stages of the research.

CRC Research Manager Michael Rumsewicz believes the forum is an essential event.

"Opportunities for the researchers and end users to get together and really talk

about the full details of individual projects are invaluable. Regular feedback and support ensures that the research priorities and activities are on track," he said.

The CRC holds Research Advisory

Forums twice a year, with the next forum to take place in the first half of this year.



CRC project leader Sujeeva Setunge at the forum.



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Join us for the 2015 conference to be held at the Adelaide Convention and Exhibition Centre, for Australasia's largest and most important emergency services and public safety conference and trade expo.

The theme for the 2015 conference is **New Directions in Emergency Management.**

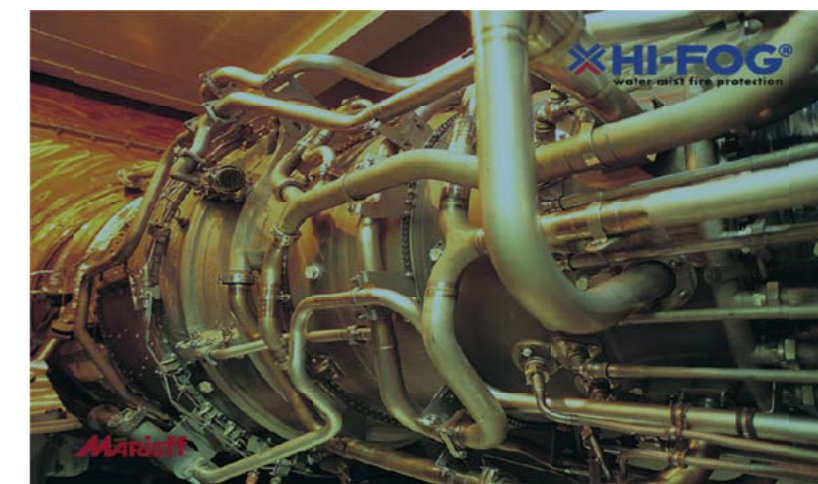
The approach to emergency management is rapidly evolving, and with it the need for better knowledge and understanding. Driven in part by the escalating cost and complexity of major incidents, the emphasis is shifting towards a holistic view that encompasses research, readiness, risk reduction, response and recovery. At the same time, our emergency service agencies are being comprehensively reformed to improve their effectiveness before, during and after a major event.

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(L-R) RiAus Director Paul Willis with CRC researchers Mika Peace, Jason Sharples and Josh Whittaker.

MERCURY RISING

The unexpected elements of a bushfire and the community's decision-making processes were explored in an interactive live event on 23 September 2014.

The Bushfire and Natural Hazards CRC teamed with South Australia's Country Fire Service and Department of Environment, Water and Natural Resources for Mercury Rising: Extreme Bushfires. RiAus hosted the event in Adelaide.

CRC researchers Dr Mika Peace

(Bureau of Meteorology), Associate Professor Jason Sharples (University of New South Wales) and Dr Josh Whittaker (RMIT University) examined the unexpected ways that weather, terrain and vegetation affect bushfire behaviour, and how communities react to extreme bushfire threat.

A live audience of emergency management practitioners and the general public watched from the studio

at the Science Exchange in Adelaide. The event was simultaneously live-streamed online, seeing hundreds of people join in the discussion via RiAus's smartphone or tablet-based audience voting system. By voting on the scenarios presented, the audience and online participants directed the discussion in a 'choose your own adventure'-style storyline.

The full replay of the live stream can be accessed at www.bnhcrc.com.au.



WARNING TO BUILDING OWNERS AND OCCUPIERS ABOUT UNETHICAL PROVIDERS

FPA Australia is currently advising all building owners and occupiers about unethical fire protection providers fraudulently posing as representatives of local authorities and conducting fake fire protection compliance audits on-site.

There are currently widespread reports of such activity, particularly in NSW and Victoria, with one known company using the sham technique widely across Sydney and recently in the Melbourne CBD.

This company may arrive on-site unexpectedly, dressed in fake fire service

or council uniforms. They will conduct an inspection of the building and highlight what they deem to be non-conformant fire protection systems and equipment, before recommending their preferred provider (a co-owned maintenance company) to remedy the situation.

Building owners and occupiers are advised to exercise caution regarding unannounced audits of their fire protection systems unless the identity of those who arrive on-site can be clearly verified as a local council inspector,

relevant fire authority, other government agency or your contracted fire protection provider.

The Association is currently compiling information and evidence on this business, which will be submitted to the ACCC and other authorities. FPA Australia is asking anyone who has experienced this unscrupulous behaviour to contact fpaa@fpaa.com.au and supply us with all relevant information so we can lodge a comprehensive submission to the relevant authorities.

ARE YOUR TECHNICIANS READY TO MEET THEIR DEADLINES FOR TRANSITION TO AN EAHL—QUALIFIED PERSONS (ENTITLEMENT 1-5) LICENCE?

The Fire Protection Industry (ODS & SGG) Board wishes to remind companies that now is an opportune time to check whether any of your technicians have an Extinguishing Agent Handling Licences (EAHL) Experienced Persons (Entitlement 1-5) licence. As of 1 December 2014 the EAHL Experienced Persons (Entitlement 1-5) is no longer available for new applicants or for existing licence holders to renew.

Companies should encourage their technicians to enrol in and complete

training and/or assessment early to avoid the risk of not being able to access and complete training and/or assessment before their permits expire.

Technicians who have not transitioned to the EAHL Qualified Persons licence within the transition period will not be able to reapply for an EAHL Experienced Persons (Entitlement 1-5) and cannot handle ozone-depleting substances and synthetic greenhouse gases (ODS & SGG) extinguishing agents without a valid permit.

Holding a permit provides technicians with a competitive advantage and demonstrates they not only meet legislated obligations for the handling of ODS and SGG but are also helping to protect the environment by preventing unnecessary discharge of scheduled extinguishing agents.

To determine the specific transition status and expiry date for your employees, please contact the Fire Protection Industry (ODS & SGG) Board at ozone@fpaa.com.au or on 03 8892 3131.



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WORKPLACE RELATIONS PLUS LAUNCHED

FPA Australia is pleased to announce its full suite of workplace relations services, including the premium Workplace Relations Plus service is now available.

All FPA Australia Corporate members who subscribe to Workplace Relations Plus are eligible to use a range of workplace agreements tailored by FPA Australia for the fire protection industry, as well as a number of other exclusive services.

Workplace Relations Plus also provides capacity for corporate members who already have their own enterprise agreements or alternative arrangements in place to receive support for these agreements from FPA Australia.

Services accessible to Workplace Relations Plus subscribers include:

- a range of tailored enterprise agreements for the fire protection industry
- support for existing enterprise agreements or other arrangements
- unlimited workplace relations phone support
- legal and industrial representation
- access to a detailed human resources kit
- access to detailed contract documents.

These products and services are in addition to the workplace relations services available to all Association Corporate members. Services include access to a wide range of detailed

workplace relations documents and support for frequently asked questions through our phone service and CONNECT member platform.

In addition, we will soon introduce a dedicated listing on the 'Providers of Choice' section of our website highlighting all corporate members that employ licensed electricians or licensed sprinkler fitters.

This listing will allow customers to find these companies quickly and easily; a significant new benefit for member companies.

We are extremely excited about our opportunity to assist members and the fire protection industry with workplace relations services, as well as continuing to provide all the outstanding benefits we deliver as the leading peak body for fire protection in Australia.

FPAS FIRE SYSTEMS DESIGN AND CERTIFICATION CLASSES ANNOUNCED

The next two classes of accreditation under the Fire Protection Accreditation Scheme (FPAS) have recently been announced. The new classes are Fire Systems Design and Fire Systems Certification.

These classes will accredit individuals who perform design and certify activities relating to selected systems and equipment in the fire protection industry.

Initially the scheme will focus on design and certify activities associated with the following systems and equipment:

- fire sprinkler systems
- fire hydrant systems
- fire detection and alarm systems.



The Fire Systems Design class covers the preparation of designs to a required standard, where the final design documentation outlines the requisite design criteria and provides documentation for procurement, manufacture, construction, installation and commissioning by competent personnel.

The Fire Systems Certification class covers the formal validation and certification that states the properties and performance of installed and commissioned systems have fulfilled the specific requirements to meet the approved design criteria.

You can find a detailed article on these two new accreditation classes of FPAS on



pages 34–36 of this issue.

FPA Australia is currently taking expressions of interest from all individuals interested in achieving accreditation in either of these new FPAS classes and from businesses that employ these individuals. It is expected that applications will officially open for these two classes in February 2015.

Email your expressions of interest for Fire Systems Design and Certification classes to fpas@fpaa.com.au. Include your name, company, class you would like to apply for and your FPA Australia corporate member level (if applicable). For more information about the Scheme please visit www.fpaa.com.au/fpas.



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Building a disaster resilient Australia

NATIONAL CERTIFICATION OF INCIDENT MANAGERS

By Jillian Edwards
 Director Capability and Member Services, AFAC

AFAC's National AIIMS Certification Scheme is soon to be introduced. The scheme will provide incident managers with the opportunity to have their skills and experience nationally recognised.

AFAC will soon formally commence a program of national certification for incident management, embarking on a journey towards a profession of emergency management. From April 2015, this new nationally recognised certification will be available to all those who perform incident management roles in accordance with the Australasian Inter-service Incident Management System (AIIMS). The scheme will provide incident managers with the opportunity to have their skills, experience and capabilities independently validated and nationally recognised. It has been designed for members of fire and emergency services as well as those who practise incident management commercially or in other government entities.

Endorsed by AFAC Council, the National AIIMS Certification Scheme has been in development since mid-2014, with senior representatives from across the AFAC membership collaborating on the program and the associated Professional Standards and criteria.

AIIMS functional roles

The National AIIMS Certification Scheme will commence with a focus on the role of incident manager, but over time will be applied to specialised functional roles as prescribed in the AIIMS-4 manual. Progressively over the next four years all other functional roles will be offered. Specialist roles such as aviation, fire investigation and fire behaviour are also being considered for the scheme.

Incident management credentials

The introduction of the National AIIMS Certification Scheme, administered by AFAC, will offer two formal credentials:

1. Accredited AIIMS Practitioner (AAP)—This credential is entry level and is awarded to an individual who has successfully completed all the eligibility requirements to perform an incident management role at routine and moderate impact emergency events. Approved agencies have the responsibility of awarding this credential.
2. Certified AIIMS Practitioner (CAP)—This credential is full professional certification and is awarded to an individual who has successfully fulfilled all eligibility requirements relevant to performing an incident management role at complex, high-consequence, high-impact emergency events. The National AIIMS Certification Panel has the responsibility of awarding this credential (see Figure 1).

Applicants for accreditation or certification will be evaluated against the Professional Standards, which specify eligibility requirements relevant to education, experience and professional development.

Recognition of AIIMS training

Those who have undertaken official AIIMS training will have the opportunity to register details in the National AIIMS Directory. This directory, available on the AFAC website, will track individuals who have been awarded formal credentials as well as those who have completed AIIMS training.

There are two levels of AIIMS training recognition:

1. AIIMS Familiarisation—Successful completion of the half- or full-day AIIMS overview training, providing a level of familiarisation with the principles of AIIMS and how it is applied.
2. AIIMS Registered User—Successful completion of the two-day accredited AIIMS course, providing entry-level training for personnel prior to specialising in specific AIIMS functional roles.

Operation of the scheme

The National AIIMS Certification Panel, charged with operation of the scheme, will comprise individuals drawn from across the AFAC membership, subject to endorsement by the AFAC Board. Panel members, appointed for a minimum of two years, must demonstrate extensive knowledge of the emergency management sector and the requirements of National AIIMS Certification. National or international qualifications, standards or regulatory experience are also required for members.



The National Certification Scheme has been designed for members of fire and emergency services and those who practise incident management commercially or in other government entities.

The panel will be responsible for:

- overseeing the development, maintenance and consistent application of all Professional Standards as required for national certification, including to 'license' AFAC member agencies where required
- fostering confidence with stakeholders that the awarding of national certification builds excellence in incident management
- awarding national certification to eligible individuals
- removing certification when necessary.

Professional Standards for incident management

All candidates for national certification will be required to demonstrate they meet the eligibility criteria as specified in the established Professional Standards, and adhere to the Code of Ethics and Standards of Professional Conduct for emergency management professionals. Key capabilities for AIIMS practitioners include: leadership; personal effectiveness; technical skills; and hazard-specific technical knowledge (see Figure 2 below).

The Professional Standards are underpinned by these capabilities and fully incorporate units and competencies endorsed by the Public Safety Training Package.

Professional Standard—Education

This is a building block in developing an individual's skills and competencies. By establishing a Professional Standard, the industry has specified the qualifications

and/or skill sets applicable to the identified roles, as well as the pathways open to an individual to achieve certification.

This Standard recognises multiple sources for attaining skills necessary for national certification including agency-delivered non-accredited courses, accredited skills sets or units of competency, vocational qualifications and higher education.

Professional Standard—Experience and Professional Development

This Standard sets the profession apart from a vocation and advances the requirement for demonstrating mastery of the profession through the pursuit of new knowledge, experiences and skills to remain current and contemporary.

This Standard recognises the unique and complex nature of incident management and the need to expose practitioners to advances in incident management systems, processes and techniques. Additionally, the dynamic nature of the environment in which emergencies occur requires practitioners to be not only technically expert, but effective, courageous and resilient, leading through times of potential high stress and complexity.

Professional Standard—Examination

Applicants will have their portfolio of evidence examined by the National AIIMS Certification Panel. This examination process will be multi-faceted, including a review of the evidence submitted and an interview with the candidate (for those applying for CAP) at which time their skills and abilities will be assessed. The focus will be on the individual's incident management résumé, the incidents they have been involved in and their performance in the role(s).

Who can apply for National Certification?

The National AIIMS Certification Scheme is open to eligible individuals, volunteers and staff from all AFAC member agencies and from other organisations where incident management expertise is required. Prospective applicants will be required to have support from their agency before applying.

AFAC is currently preparing all the necessary information and procedures to commence operations, with a formal starting date of April 2015.

Visit the AFAC website for more information. ■

The National AIIMS Certification Scheme will commence with a focus on the role of Incident Manager, but over time will be applied to the specialised functional roles as prescribed in the AIIMS-4 manual.

Figure 1 The two credentials of the National AIIMS Certification Scheme

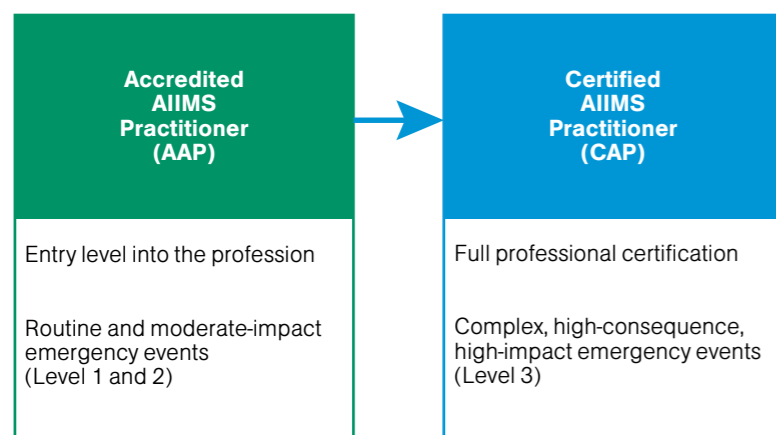


Figure 2 Key capabilities for AIIMS practitioners



FIRE PROTECTION IN THE PORT OF MIAMI TUNNEL

Duane Gilbert
Marketing
Manager, Viking
Corporation

Tunnels create a unique fire protection challenge, and the Miami tunnels were no different—13.7 kilometre twin tunnels, each with a diameter of 13.1 metres, over 35 metres below Port Miami.

The tunnel project

The Port of Miami Tunnel (POMT) was built by MAT Concessionaire, USA, in partnership with the Florida Department of Transportation (FDOT), Miami-Dade County and the City of Miami, USA.

By connecting MacArthur Causeway to Dodge Island, the tunnels provide direct access between the seaport and highways I-395 and I-95, creating another entry to Port Miami (in addition to the Port Bridge). The tunnels help to keep Port Miami, the city's second largest economic generator, competitive. Nearly 16,000 vehicles travel to and from Port Miami through downtown streets each day. The new tunnels reduce port-user costs, increase safety and drive economic growth. Additionally, the tunnels improve traffic flow in downtown Miami by reducing the number of cargo trucks and cruise-related vehicles on congested downtown streets, and aids ongoing and future development in and around downtown Miami.

Tunnel fire prevention system design

Traffic tunnel fires are vastly different from open-air fires. Vehicles burn far more intensely in confined spaces. There is a high likelihood that trucks and tankers contain combustible loads that exponentially add to the danger. Smoke can quickly reach poisonous levels and travel very quickly, and can even choke off the oxygen to engines and cause vehicles to stall. Under these conditions, emergency services can find it nearly impossible to respond.

Additional factors add complexity to designing traffic tunnel fire systems. Space is limited and curved tunnel walls, wall construction type and clear space for mechanical devices add to the challenge of installing a fire protection system. Air currents can push heat away from the fire's source, potentially activating

sprinklers that can't reach the fire. The fire can even be a moving target on a burning vehicle. Additionally, high litre-per-minute flow requirements make fire protection specification and design far from routine.

The Miami Port Authority faced all these challenges and more when considering a fire detection and suppression system for its POMT project. The contractor, National Fire Protection (NFP), had a strong portfolio of large and complex special hazard-system projects, including the Pentagon, Dulles International Airport, the US Coast Guard Headquarters, Marlins Ballpark and Miami International Airport.

After NFP's initial review of tunnel system and component recommendations and specifications, some roadblocks were identified regarding the deluge fire suppression system:

- the initial valve selection could not supply the required flow rate of 4,163 litres per minute
- the friction loss through the initial valve selection was very high and called for increased pipe sizing to compensate for the high pressure losses
- ferrous metal components did not meet the domestic requirement for 100% US-sourced materials.

NFP consulted with Viking Corporation, manufacturer and global distributor of fire protection and life safety systems. With a plywood mock-up provided by NFP as a starting point, Viking was able to specify a valve rated for the required 4,163 litres per minute flow rate, design a contoured control cabinet that fitted the curvature of the tunnel wall, and develop a total package assembly-test-shipping process that delivered a 'plug and play' system to the construction site. A 3D model was developed and the next six months were spent working with NFP to refine the details

Port of Miami Tunnel facts

The Port of Miami Tunnel has incorporated the latest safety features, including state-of-the-art automatic incident detection and active sprinkler fire-suppression systems. The tunnel's 91 roadway CCTV cameras and 2.8 m video wall displays the entire tunnel's interior in less than 15 seconds. This means the fire would be in its initial stages when detected, so early activation of the fire-protection system should minimise damage, which would also minimise interrupting the tunnel operation. The tunnels are fitted with 15.25 m hurricane floodgates to ensure the tunnel survives storm surges. Air quality is maintained with eight air quality sensors driving the tunnel's 44 ventilation fans. Together these systems provide a high degree of safety for motorists.



PHOTO: PORT OF MIAMI TUNNEL

NEWS FLASH

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so that the design met every Port of Miami Tunnel performance requirement.

The fire protection systems had the following requirements:

- remote electrical activation and reset
- system to remain in its last state (if the valve is activated and a power outage occurs, the system remains activated)
- manual activation at system location
- corrosion resistant cabinet constructed of 316-grade passivated stainless steel
- supervisory alarms for door access, emergency-release hatch
- waterproof enclosure (the cabinets are located within the tunnel and are washed when the tunnel is cleaned).

The on-off deluge cabinet system is equipped with a 100 mm flow-control valve equipped with pressure-regulating trim. The control valve is activated through an impulse valve, which requires a power pulse to change its state from open to closed or closed to open. The impulse valve is used instead of a standard normally closed solenoid valve, so the system stays latched in its last operating state. The system is electrically operated, and if for whatever reason wiring is breached during activation, the system will continue to function.

The cabinet, constructed of 316-grade stainless steel, is equipped with a water supply shut-off valve and a system isolation valve. A visual monitoring system with immediate on-off actuation ensures that system controllers can send water to any zone in seconds. Zones can also be actuated from their individual cabinets, which are not locked and are clearly marked with operating instructions. Two cabinet configurations were provided—single system and double system. The single cabinet system is equipped with door alarm switches that report to the supervisory control and data acquisition (SCADA) system when either the emergency release door is opened or if the main riser door is opened. The

double-system cabinet is equipped with door alarm switches that report to the SCADA system when either the emergency release door is opened or if either of the main riser doors are opened. Each cabinet is addressed to the SCADA system for identification.

A flow-control valve was required in this application instead of a standard deluge valve to control not only the quantity of water flowing, but also the water flow rate and pressure and the on-off feature. The regulating trim assembled on the valve allowed NFP to set each riser's outlet pressure and flow rate required for the system.

Most flow-control valves have three chambers: an inlet, priming and outlet chamber. The priming chamber controls the valve's open and close functions. Water is provided to the priming chamber upstream of the valve's inlet chamber, normally through a port on the control valve. The impulse valve located on the pressure-regulating trim powers open to drain the water from the priming chamber and the exiting water is channelled through a pilot regulating valve, which discharges to the outlet chamber of the flow-control valve.

Once the outlet pressure is set on the regulating valve, the outlet pressure will not increase, regardless of what is happening with the water-supply pressure. The flow-control valves have a gentle open and gentle close when equipped with regulating trim, which avoids the extreme water hammer that occurs with standard flow-control trim. A speed-control assembly ensures smooth operation.

The system is operated manually from the control room. Cameras throughout the tunnels provide instant condition monitoring. Trained attendees at the control room are constantly viewing the camera monitors. If a fire occurs, the specific zone(s) are activated. The design required that the water supply be capable of supplying two operating systems. ■

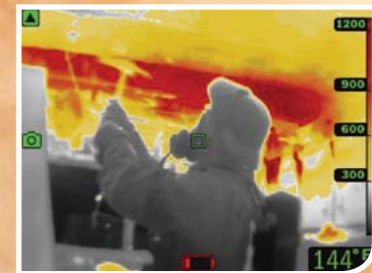
For more information contact Rick Tanner, Viking Fire Protection Managing Director on 08 8352 2888

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Single cabinet system

The project includes two single-system and 40 dual-system cabinets. Components and features include:

- water supply shut-off valve and system isolation valve
- valve riser designed for immediate open-close
- remote activation and reset
- impulse valves to control priming water pressure through a switch in an attended control room
- door alarm switches that report to the SCADA system when emergency release doors or main riser doors are opened.



Double cabinet system

On-off deluge cabinet system with Model J-1 flow-control valve, pressure-regulating trim and on-off impulse valve that remains in its last powered state to ensure continued operation in the event of a power interruption.



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*AUD, ex GST, ex works Melbourne

The Wollombi Valley Firewise community, comprising local residents and members of the Rural Fire Brigade.



SMART STRATEGIES FOR LOCAL COMMUNITIES

PHOTO: WOLLOMBI RURAL FIRE BRIGADE

By Nathan Maddock
Communications Officer, Bushfire and Natural Hazards CRC

Profiling one rural fire brigade's use of national research findings on bushfire community safety.

Nestled in a valley in the lower Hunter region of New South Wales is the town of Wollombi, bordered on all sides by extensive eucalypt forest. National parks and state forests completely surround the town and there are only three roads in and out. The risk of a bushfire is high, with major fires occurring in 1994, 2001, 2002 and 2004.

But with this high fire risk comes a unique approach to combating it, driven through local volunteer fire brigades. It doesn't just involve big red trucks, orange air cranes in the sky or scores of yellow-clad volunteers dousing roaring flames. Their mode of attack has been to use evidence-based research to increase the knowledge of local residents to their level of fire risk and how to combat it.

"I could see the real value of us educating the locals," said Glenn O'Rourke, Deputy Captain and Community Safety Officer at the Wollombi Rural Fire Brigade.

"We would have a fire, with smoke across the valley. People would ask 'where is the fire, what's happening?' They would have a real sense of concern about the threat of bushfire and what they should do. They would want to engage with us [the brigade], but I could see many of our brigade members not knowing how to respond, or not understanding that we had a role to play beyond just fighting the fire. I thought—we've got a lot of knowledge we should share."

This was back in 2005 and the brigade's first foray into community safety came in the form of a visit to a small remote community located within the

Yengo National Park, about 45 minutes from town.

"They were very concerned about their bushfire risk, so we said we would come out and have a chat," Mr O'Rourke said.

"We literally hopped in the truck, had the BBQ on the back and off we went. On the way we were talking to each other, wondering what we were going to say.

"When we got out there we stood around and chatted, answering questions. They were thanking us and saying how great it was. We jumped back in the truck and headed home and said to ourselves, 'wow how fantastic was that?' We gave them a lot of information, increased their confidence levels and made a risky area safer for the community and the brigade.

"That was really the start. We then started to target areas of highest risk and where we knew locals would be interested."

Research conducted by the Bushfire CRC, and now the Bushfire and Natural Hazards CRC, after major bushfires since 2009's Black Saturday fires has shown a significant percentage of residents interviewed did not believe that they were at risk from a bushfire, and therefore neither planned nor prepared for the possibility that a bushfire would actually occur. Written plans, which are strongly advocated by fire agencies, were a rarity, with only 5.4% of the 1669 people surveyed across Victoria, Western Australia, Tasmania and New South Wales indicating they had a written survival plan. Few interviewees had participated in organised community bushfire safety activities.

Mr O'Rourke has followed the research closely. He has used the findings to inform the brigade's community engagement strategy.

"The research for me is really powerful. It really reinforces and gives you confidence that these are the critical things we need to focus on," he said.

"From experience I had a sense of what was important to better prepare our community for fire. But then I looked at the CRC research and found it strongly and objectively confirmed our approach was right, reinforcing our strategy to stick to the fundamentals."

Mr O'Rourke analysed the findings of Bushfire CRC research conducted after the January 2013 fires around Yass, Shoalhaven and Coonabarabran in NSW. He broke down the findings into seven key engagement areas:

- survival planning
- preparation
- local information
- naming of fires
- warnings and alerts
- fire danger ratings
- survival decision making.

The brigade has four main community engagement principles that cover these seven key engagement areas:

1. Understanding the level of risk
2. Understanding how to effectively prepare
3. How to make a really good survival decision
4. Document a practical plan that reflects this decision.

Mr O'Rourke believes the Wollombi community has responded positively to a friendly—but, most importantly, a highly professional—approach to bushfire safety; an approach that is backed with the latest information and independent research.

"It is about two key things: accessibility and, absolutely, about credibility," he observed.

"The doors are open to come in and we [the brigade] have strong, credible evidence from a research base to say 'here is the level of fire risk'. It reinforces the professionalism of the brigade.

"These relationships are built during

a time when there is no fire. They [the community] see us as professional, trusted and that we know what we're talking about.

"When a fire occurs, we become repositioned as leaders. There is a level of trust and respect when it is really needed."

The Wollombi brigade has a number of forums it uses to increase community safety and conducts its own evaluation to measure success.

There is a simple evaluation strategy and, before a workshop or forum, each participant is asked to rate their level of understanding of, for example, risk of fire. After the workshop, the same question is asked.

"We haven't scared people, but have shifted their knowledge and given them confidence," Mr O'Rourke explained.

But what happens next, after the workshop, when the community member is back in their home or out on their property? Mr O'Rourke had wondered this same thing.

"I had always thought 'we have generated all this energy in the workshop, but have we actually translated that into changed behaviour?'"

To measure this, in January 2013 when there were three fires in the area, Mr O'Rourke surveyed people who had participated in a local bushfire safety workshop or attended a bushfire safety information forum. 162 people responded, a response rate of 36%.

"We were able to determine that not only have we had people leave a workshop saying, 'yes, you have changed my level of understanding,' but also 'I have taken that knowledge and changed my behaviour,'" Mr O'Rourke said.

88% of those surveyed were aware of the fires, with 51% declaring that they had a written Bushfire Survival Plan. This written plan figure is remarkably more than the 5.4% of the 1,669 people surveyed between 2009 and 2014.

Wollombi Rural Fire Brigade's evaluation also showed an increase in the preparation for a bushfire, with 91% indicating they were very well prepared, well prepared or prepared, with 79% taking steps to implement their survival plan.

"For me, this was the evidence that we were changing people's behaviour," assessed Mr O'Rourke. "It was the proof that it works."

And this local approach, backed by national research, is proving to make a difference. ■

Glenn O'Rourke talks about bushfire risk and preparation with a local FireSafe Neighbours Group.

The Wollombi Valley Community Firewise Program (comprising the Wollombi, Laguna, Bucketty and Millfield Rural Fire Brigades) has been recognised for its community engagement success with the following awards:

NSW Rural Fire Service—Community Engagement Award
Community Safety Program Award for Best Practice, 2012

Resilient Australia Awards 2012
Winner of NSW State Awards—Volunteer/Community Group Category

Highly Commended National Awards—Volunteer/Community Group Category

PHOTO: WOLLOMBI RURAL FIRE BRIGADE



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- 4 Core & Earth

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- 2 Core

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* Fire Rated Cables only



EBOLA DECONTAMINATION FORUM

By **Zoe Kenyon**
Project Officer
Operations
Support, AFAC

AFAC recently facilitated a forum on Ebola decontamination to identify how to best equip and prepare responding personnel, should an outbreak occur in Australia.

Emergency services representatives attended a forum to consider their role if an Ebola outbreak occurred in Australia.

What would happen if an outbreak of the Ebola virus disease (EVD) occurred on Australian soil? Would emergency services be equipped to assist with response?

AFAC recently facilitated an Ebola decontamination forum to discuss these concerns. Held on 27 November 2014, the event allowed fire services to share information on decontamination processes and plans within their jurisdictions to support state health departments if an EVD outbreak occurred in Australia.

Chaired by Acting Deputy Commissioner Jim Hamilton, Fire & Rescue NSW, the forum was sponsored by the AFAC collaboration groups, Urban Operations and Hazardous Materials. Guest speakers provided detailed and varied insight into EVD. Presentations highlighted clinical information, decontamination and environmental health impacts and the Commonwealth response arrangements.

Clinical perspective

Professor Lyn Gilbert, an infectious disease physician appointed to oversee Australia's response to the EVD threat as a member of the Australian Health Protection Principal Committee (AHPPC), delivered the opening presentation.

Professor Gilbert reassured delegates that unlike other pandemics, there is no evidence of airborne transmission of EVD. She explained the aim for healthcare workers is to be familiar with their personal protective equipment (PPE) and be confident in 'donning' and 'doffing' procedures. Following correct procedure will help minimise the risks of secondary infection.

"Taking off PPE is critical, as it has been related to causing contamination," Professor Gilbert said. "Always ensure it is removed in the presence of a trained operator or instructor to ensure correct procedure is followed."

Environmental impacts and decontamination

Red Cross representative Bob Handby is a water and sanitation specialist who had been deployed to Sierra Leone, assisting with waste management, water supply and body management at a 60-bed field hospital.

Mr Handby shared his experiences of the practicalities of decontamination, including waste management and the potency of chlorine decontamination. He stressed availability and access to chlorine is critical to decontaminating waste from treating EVD patients.

Commonwealth arrangements

Acting Assistant Secretary Matthew Harper of Emergency Management Australia's Crisis Coordination Branch outlined the Commonwealth's response to suspected EVD cases in Australia. He discussed action the Commonwealth had taken to assist international efforts, as well as what the national coordination would look like, should an EVD outbreak occur.

Key outcomes

At the conclusion of the forum, participants agreed that a national, consistent approach in the form of an Industry Statement and key recommendations, circulated through AFAC, would help ensure best-practice response across all jurisdictions. The following provisions are to be incorporated:

- Agencies will respond to support state health departments or ambulance services in the event of an EVD decontamination event according to their jurisdictional arrangements. Roles and responsibilities of each agency are to be clearly defined.
- Equipment used must be fit for purpose and meet Australian Standards.
- Appropriate donning and doffing procedures for PPE are to be adhered to.
- Standard Operating Procedures and/or Standard Operating Guidelines are to be reviewed to ensure currency.
- A multi-agency incident management component is to be implemented should an EVD outbreak occur.

A formal relationship has also been established between AFAC and the AHPPC to ensure the emergency services can access the most current information on EVD. ■



DELIVERING A FIRE SAFE FUTURE



Download the full program, including all keynote speakers and delegate registration at www.fireaustralia.com.au



By Joseph Keller
Communications Manager,
FPA Australia

The Fire Australia 2015 conference and exhibition is set to be another flagship event for the fire protection industry.

Fire Australia 2015 is the premier fire protection industry conference, attracting a wide range of representation from businesses, government and fire safety practitioners.

Regular attendees to the conference will notice it has moved from a November schedule to March. This is to move away from peak conference season, thus providing more industry personnel the opportunity to attend.

Building on the success of the last conference and exhibition, Fire Australia 2015 will once again provide delegates the option of attending multiple streams over both days.

Conference streams

The streams will provide a choice of presentations with one stream focusing on the conference theme and the other on specific areas of the fire protection industry. The industry-specific stream will cover the key industry sectors of early warning and detection, fire suppression, passive fire protection, emergency management, maintenance and bushfire. Presentations will address current issues, industry direction and challenges and technical content relevant to those with an involvement in the fire protection industry.

Conference theme

To ensure fire-safe buildings and infrastructure, a robust fire safety strategy must be supported by reliable fire protection systems and equipment demonstrated to be fit for purpose. This requires that decisions on building concept design and the selection of fire safety equipment and systems are right from the very first stages of a project.

When a system or technology is poorly designed, incorrectly selected and improperly installed, commissioned and certified, the impacts of these actions affect the safety of the building's occupants and the building itself. There may be major problems during maintenance and an impact throughout the life cycle of the building or piece of infrastructure. Potential failure of equipment, construction elements or systems could occur. This may result in loss of lives and property and significantly increase the legal liability of all involved in the supply chain from manufacturers through to installers and ultimately building owners.

The theme of Fire Australia 2015 focuses on making an informed choice about product selection, ensuring fire safety systems and equipment are fit for purpose once installed. This will ensure dependable and cost-effective fire protection throughout the lifespan of the building or infrastructure. A key aspect of any system is using the right products for the right circumstances in the right way.

The conference will highlight issues of product and system approval methods including 'evidence of suitability' options in the marketplace and the differences between them. It will also look at the technologies we adopt and adapt to the Australian market, and how we compare with other countries for design, testing, certification and approval.

Exhibition presentations

The exhibition will once again be a main feature of the event and will be located central to all aspects of the conference. Sponsors and exhibitors have the opportunity to present on their products and services within the exhibition hall.

These presentations will occur during breaks in the plenary sessions. With speakers from across Australia, as well as overseas, FPA Australia aims to ensure all presentations are topical and current, affording attendees across all roles in the fire protection industry additional knowledge and information.

Conference venue Gold Coast Convention and Exhibition Centre

The Gold Coast Convention and Exhibition Centre was recently recognised at the Queensland Tourism Awards as Queensland's best venue for meetings and business tourism.

Centrally located in Broadbeach—3 km from the heart of Surfers Paradise and only 500 m from the beach—few destinations have so many amenities and accommodation options. Conveniently linked to Jupiters Hotel and Casino (the award-winning hotel-casino complex) via a pedestrian bridge, the centre is specifically designed to make your visit easier.

The centre is located a short walk from the surf beach and the Broadbeach alfresco dining precinct

featuring more than 100 restaurants and cafés offering rich culinary diversity with tastes from around the globe.

The village atmosphere in Broadbeach offers a European feel as you walk the streets and choose from one of the multi-award-winning restaurants or chic coffee houses along Surf Parade, or perhaps spoil yourself at one of the trendy eateries in Broadbeach Mall.

The centre is highly accessible, located 20 minutes north of the Gold Coast Airport and one hour south of the Brisbane International Airport. Transport options service the centre, including taxis, buses and the new G:Link Light Rail.



**Conference dinner
Jupiters Hotel & Casino,
Pavilion Marquee
Broadbeach Island, Broadbeach
Wednesday 25 March 2015
6.30 pm for 7.00–11.00 pm
\$150 per person—One ticket
included with full conference
registration**

This night of networking and fun is an opportunity to relax with your industry colleagues and friends with some entertainment thrown in. The night will include a sumptuous three-course meal, accompanied by a selection of wines, beers and soft drink.

Attendees at the dinner will hear one of Australia's best known and leading comic entertainers, Vince Sorrenti. Performing at over 200 events a year, Vince is known for his ability to take a topic and turn it into a laugh fest. His work runs the gamut, from TV hosting, movie appearances and comedy albums to festival performances. He is a four-time winner of the Mo Award as Australia's best comic entertainer and as a writer he has won a gold medal at the New York Film Festival. With Vince Sorrenti on hand it is sure to be one entertaining night.



Exhibition hall

The exhibition is the central component of Fire Australia 2015, attracting a large number and wide cross-section of trade show attendees. Access to the trade show will be free to maximise attendance and provide exhibitors with additional avenues to generate brand awareness and new business. All components of the conference will feed off the exhibition area and reference to the exhibition will be made throughout the conference proceedings. The space will also house a café-style catering area and a 'meet the speaker' lounge. The full exhibitor listing and floor plan is available within the conference program and on the website.

Product presentations

Sponsors and exhibitors will be invited to provide short presentations on their products and services. These presentations will be held in the main café seating area within the exhibition hall during breaks in the plenary sessions. An application form will be sent as part of the exhibitor kit or sponsorship agreement.

Attendees

Fire Australia 2015 predominantly draws delegates from all states and territories of Australia and from New Zealand and the Asia-Pacific region. The conference format will ensure industry issues are professionally presented and a strong attendance of industry personnel is expected, including:

- Fire Equipment Manufacturers, Distributors and Installers
- Fire Protection Technicians
- Fire Consultants and Engineers
- Facility Managers, Property Developers and Building Owners
- Fire Service Personnel
- Regulatory Authorities and Legislators
- Insurance Professionals
- Architects, Building Designers and Specifiers
- Building Surveyors
- Environmental Engineers & Sustainability Managers.





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WEDNESDAY 25 & THURSDAY 26 MARCH 2015 GOLD COAST CONVENTION & EXHIBITION CENTRE

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Fire safety depends on many factors. Critical to this is ensuring that fire safety products are designed, installed and maintained so that they are fit-for-purpose.

It is essential that the right decisions are made from conception through to completion and that evidence is provided demonstrating complying products are selected and installed to ensure the reliability and longevity of every system.



Compulsive hoarding exacerbates the normal hazards associated with fire.

HOARDING HAZARDS

By Mandy Cant
Communications
Coordinator, AFAC

Hoarding represents a complex social issue that requires a complex multi-agency response. Through research and risk reduction strategies fire agencies are equipping personnel with the necessary skills to respond.

Each year hoarding is linked to a considerable and increasing number of fire incidents. The excessive accumulation of materials in homes poses a significant threat to firefighters as well as those affected by hoarding and their neighbours. The prevalence and severity of hoarding is compounded by abnormally high fuel loads, thus increasing the chance of ignition occurring, reducing the occupant's ability to escape and restricting firefighter access. The intensity of the fire and the firefighting resources needed to extinguish the blaze also increase. Thus, equipping personnel with the skills to respond to this complex issue, in both preventive and responsive manners, is vital.

Fire-associated risks of hoarding

In recent years, fire services have increased their focus on hoarding and the associated risks. In July 2014 Fire & Rescue NSW (FRNSW) undertook a series of test burns at a CSIRO burn facility to validate the greater fire risks associated with hoarding. Two bedrooms with different levels of hoarding—moderate and severe—were recreated for full-scale fire testing. This work is an important step towards better understanding fire behaviour in a hoarding scenario, and the impact on responding firefighters when attending such an

incident. It is one of the first such tests to be conducted worldwide.

The tests identified the intensity of the fire was not determined by the level of hoarding, but rather the ignition source, the type of hoarded materials first ignited and their arrangement. Flashover, or when the entire room is engulfed by flame, occurred in the bedroom with severe hoarding in just under two minutes. Therefore, fire risk dramatically increases when open-flame ignition sources, such as unconventional cooking and heating practices, as commonly found in residences of people affected by hoarding, are present. The tests also demonstrated the increased effort and resources needed to extinguish hoarding fires.

The Metropolitan Fire and Emergency Services Board (MFB) in Victoria has also conducted research into the issue of hoarding. A 2014 report, *An analysis of hoarding and squalor related incidents and responses*, developed and sponsored by MFB and conducted by the Worcester Polytechnic Institute (WPI), USA, is the third in a series of hoarding-related studies conducted since 2009. The MFB/WPI research was developed and led by MFB's Julie Harris, Manager at Risk Groups – Community Resilience, who has



PHOTOS COURTESY OF JAN CHRONICLE BROWN, FIRE & RESCUE NSW

Test burns, conducted by FRNSW at a CSIRO burn facility, compared fire risk at different levels of hoarding. The test site pictured above represents a moderate level of hoarding and a CIR level five ranking.

Hoarding is the persistent accumulation of and a lack of ability to relinquish large numbers of objects or living animals. It results in dangerous levels of clutter in and around the home that compromise the intended use of the premises and threaten the health and safety of its occupants and their neighbours. Commonly hoarded items include personal papers, newspapers, clothing, furniture, appliances, household rubbish, animals and hard rubbish. The severity of hoarding is ranked using Dr Frost's Clutter Image Rating (CIR) Scale. Dwellings ranked level five and over should be reported.

coordinated MFB's response to the issues of hoarding and squalor since 2007. Through the most recent findings it has been identified the incidence rate of hoarding fires has increased to approximately one every four days. This is a sharp rise from one every nine days, as similar research found in 2012. The study also found that while 90% of residential fires were contained to the room of origin, this figure dropped to 70% in hoarding-related incidents. Further, these findings were linked with a dramatic increase in the estimated costs of damage, rising from an average of \$12,500 in residential fires to \$68,000 in hoarding fires, with a maximum estimated damage bill of \$500,000. These statistics go some way to showcasing the prevalence and severity of hoarding.

The work of FRNSW and MFB shows that hoarding adds an increased level of complication and risk to operational response. Firefighters attending a house fire as first responders may not be aware that the home is occupied by an individual affected by hoarding. Once firefighters discover the unsafe living conditions, the responders must implement strategies to better mitigate risks.

"Firefighters are in a unique position, one that is conducive to uncovering cases of hoarding and referring affected individuals to the assistance

they require," said Assistant Chief Officer Rob Purcell, Director Community Resilience at MFB.

"Hoarding is a consistent and increasing challenge for fire services. The complexity of each individual situation means a multi-agency approach is vital."

FRNSW is also committed to using a multi-faceted approach to addressing this growing area of concern.

"We are addressing this fire risk by improving the operational response to these incidents, providing risk-reduction advice for residents and directing people affected by hoarding to appropriate treatment programs and services," said FRNSW Acting Assistant Commissioner Chris Lewis.

Risk-reduction strategies

Hoarding is a progressive and chronic condition often linked to behavioural avoidance. As a result, long-term change takes considerable effort. Referring affected people to the support they require is vital to reducing the risk of fire and a range of complex related safety, health and wellbeing issues.

"Hoarding is a complex social issue which requires intervention and long-term support from appropriate agencies," said Senior Firefighter Melanie Rebane, Community Safety Coordinator for Ageing and Disabilities, FRNSW.

"Currently FRNSW report and refer notifications of premises where significant hoarding and squalor are present. But this is challenging as there is currently no statewide protocol in New South Wales that is specific for addressing situations of hoarding and referring affected people to services and treatment programs."

People affected by hoarding may also experience a high level of isolation and reject offers of assistance as they fear this will result in the removal of their possessions. To improve community engagement relating to this issue, FRNSW and MFB are working together to enhance fire risk-reduction advice to assist families, social workers and service providers of residents living in conditions of hoarding and squalor.

Both fire agencies also continue to seek opportunities to better engage key stakeholders, both internal and external, to further develop shared practice and response.

"It is important to connect those affected by hoarding with the right service provider to reduce risk for the community. This may mean representatives from health, housing, aged care, local law or environment," Mr Purcell said.

MFB lobbied for a Victoria-wide Hoarding and Squalor Taskforce to help ensure effective intervention, and the protocol developed from this taskforce has been in place since June 2013.

Both MFB and FRNSW recommend individuals or agencies assisting those affected by hoarding install multiple smoke alarms and test them regularly. Individuals or agencies also need to unblock exits, widen internal pathways, check utilities are connected and prioritise removing clutter from around cooking areas, heaters and electrical equipment. The goal is to return functionality to the home while reducing risk and building trust.

"Working smoke alarms are critical in hoarding households to provide early warning

to occupants," Ms Rebane explained.

"Our research shows that escape time will be significantly reduced because of the hoarded materials; occupants must not delay their escape when an alarm activates.

"Prevention and early intervention measures are essential to the overall risk-mitigation strategy," Ms Rebane advised.

Operational response

Individuals affected by compulsive hoarding often inhabit chaotic living environments. In severe cases, access to doors and windows is blocked. The increased fuel load that results from hoarding, alongside restricted exit from a building, is dangerous not only for residents but also their neighbours and first responders.

MFB's 2014 study highlighted that 38% of hoarding-related fires required more than three appliances to attend the incident, an increase on the standard response to first alarm. In addition, almost half of all hoarding fires required more than ten firefighters, with as many as 54 firefighters required for the largest fire. Findings such as this further demonstrate the vastly increased resources needed to extinguish a hoarding fire, as well as the impact on first responder safety.

According to Mr Purcell, compulsive hoarding exacerbates the normal hazards associated with fire.

In NSW, service providers and firefighters have reported hoarding risk concerns to FRNSW since 2009. Where households have been identified as a level five or above on Dr Frost's Clutter Image Rating Scale, FRNSW places a discreet alert on the premises in their station turnout system to better prepare firefighters and automatically increase the response from the standard two-appliance response to four fire appliances.

As part of its organisational commitment to increasing firefighter preparedness and safety and improving safety outcomes, MFB has included information about hoarding in the new edition of the *MFB Emergency Response Guidebook*.

The guide, developed in close conjunction with operational staff, draws out key considerations, safety concerns and response methods for those attending a hoarding fire. These include the increased likelihood of biohazards, trip hazards, unsafe utility connection, high fuel loads, compromised access and egress, and difficulty identifying the seat of the fire. Safety precautions such as early deployment of biohazard personal protective equipment (PPE), comprehensive testing for gas and electricity risks, and assigning a safety officer are also identified.

MFB also uses an automated form for identifying hoarding-affected residences. As in NSW, a hoarding icon now appears on MFB's fire station turnout sheets when crews are responding to an identified hoarding property or when such a property has been identified within 40 m of an incident. MFB promotes its Hoarding Notification System with other agencies as a proactive way to increase the safety of those affected by hoarding, their neighbours and firefighters. The South Australian Metropolitan

Fire Service is also considering this system.

Recently, the NSW State Hoarding and Squalor Taskforce and the Committee on Environment and Regulation, have proposed a sophisticated interagency response to hoarding-related incidents. This response will include statewide coordination of government and non-government agencies; education and training for responders and the broader community; a telephone hotline; triage arrangements to ensure cases are reported and dealt with effectively and expertly, and are referred in a timely manner; and mandatory reporting.

The risk-reduction and operational strategies of both MFB and FRNSW are just part of a complex response to a complex issue. Enhanced risk-reduction measures are needed to protect firefighters and those affected by hoarding alike.

"Well-connected, well-supported people are more likely to be able to prevent, prepare and respond to their own safety," Ms Rebane said. ■



The recreated CIR level eight bedroom reached flashover in 100 seconds during FRNSW's test burn.



First responder safety is impacted by the abnormally high fuel loads associated with hoarding.



This research will allow accurate comparisons of the fatalities or economic impact of emergencies, even if they occurred decades apart.

A CENTURY OF NATURAL DISASTERS—WHAT ARE THE COSTS?

CREDIT: SUPPLIED

By Rob van den Honert, Lucinda Coates, Katharine Haynes and Ryan Crompton
 Bushfire and Natural Hazards CRC and Risk Frontiers

Bushfire and Natural Hazards CRC research helps to accurately compare the impacts of disasters from more than 100 years ago with more recent events.

Australian folklore from the last two centuries is full of tales of natural disasters. But Australia has changed drastically. The population has vastly grown and our built environment is more complex and dispersed across the landscape. Can we accurately compare the impacts of disasters from more than 100 years ago with more recent events? Bushfire and Natural Hazards CRC research will enable comparisons of natural hazard events, even if they are many years apart.

This article is an edited abstract of a paper delivered as part of the Research Forum at the AFAC and Bushfire & Natural Hazards CRC annual conference in September 2014. The full abstract and podcast of the presentation are available at www.bnhrcc.com.au.

The research

This paper is a first pass at quantifying the impacts of natural hazards on fatalities and building losses in Australia over the past century. The emphasis is on developing a methodology that allows the effects of societal changes (population and wealth) across time to be taken into consideration. This process, termed 'normalisation', effectively estimates the building losses or fatalities from an event as if the event were to impact present-day society, allowing a comparison of the most damaging natural hazard events, even if they occurred decades apart.

The Bushfire and Natural Hazards CRC project, *An analysis of building losses and human fatalities from*

natural disasters, aims to measure and understand the impacts of natural hazards in terms of the toll on human life and the built environment. This examination is a fundamental first step to providing an evidence base for future emergency management policy, practice and resource allocation and to enable efficient and strategic risk-reduction strategies. The analysis underpinning the project will be based on an examination of the historical record of losses caused by natural hazards in Australia since 1900.

There are two distinct focuses of the research:

1. an analysis of building damage, by hazard, across time and by state or territory due to natural hazards
2. a longitudinal analysis of the social and environmental circumstances in respect of fatalities, injuries and near-misses.

This second aspect will include an examination of trends over time in terms of exposure and vulnerability. It is envisaged these trends will be interpreted in the context of emerging issues (e.g. an ageing population, spatial population shifts and climate change) and how these issues might influence vulnerability and exposure trends in the future.

Key to this project will be the collection of data relating to losses (human and building) from natural disasters, in particular flood, cyclone, bushfire, severe storm, heatwave and earthquake. Some data already exists in the Risk Frontiers PerilAUS database; the objective is to make this dataset as complete as possible.

Database of natural hazards in Australia

The study will use Risk Frontier's unique database of natural hazard impacts, PerilAUS. PerilAUS has been compiled over the past 30 years; it is a comprehensive database of natural hazard events in Australia that have caused fatalities and/or damage to buildings, agriculture, infrastructure and lifelines. Hazards covered are bushfire, earthquake, flood, windstorm, hailstorm, heatwave, landslide, lightning strike, severe rain, tornado, cyclone and tsunami. All major disasters since 1900 to the end of 2013 are covered, resulting in almost 14,500 individual events.

Where available, data has also been collected on the economic, social and environmental impacts of the event and on the number of people injured, evacuated and/or rendered homeless.

Losses in terms of buildings

Globally, insured losses caused by natural disaster events have increased rapidly in recent years. While the insured real losses are rising, the losses are seen to fluctuate wildly from year to year. Australia is not immune to this. Data from the Insurance Council of Australia's Historical Disaster Statistics list,¹ see Figure 1, is composed of insurance industry losses from weather-related natural hazards (e.g. hail, floods and cyclones) in Australia since 1967.

The data shows an increasing trend over time—the trend is statistically very significant, and increasing at an annual average rate of \$32 million per year.

What might be causing this increase in losses? Over recent years there have been societal changes, for example significant population growth and movements of some of this population to areas susceptible to natural hazards (such as river floodplains and coastal or bushland fringes). Furthermore, with this increase in population has come an increase in wealth in hazard-prone areas—homes are costing more in dollar terms and are getting bigger. The Gold Coast in Queensland is a great example—today's version is vastly different from the Gold Coast of the 1950s.

These societal changes offer a clue to the increase in insured losses from natural hazards.

But to accurately compare disasters that occurred many decades apart, sometimes more, data must be normalised. This is the process of adjusting historical losses for known societal changes (i.e. numbers of homes, the value of these homes and improvements in building codes and construction).

After normalisation the loss data shows a different picture. While there is substantial variability across time, there is now no statistically significant upward trend. This result implies that no signal has yet been detected to indicate that insured losses from causes other than societal changes (such as population changes and wealth growth) are increasing.

Major Australian disaster losses in dollar terms

Normalisation allows a comparison of the most damaging natural hazard events, even if they occurred many years apart, as shown by the table of losses in dollar terms (see Table 1).

The table shows that, after removal of the impact

of population and wealth, no single peril dominates or is responsible for most insured building losses—hailstorms, cyclones, floods, earthquakes and bushfires all feature as the most damaging events in Australia. This means mitigation against natural hazards cannot be limited to one disaster type alone.

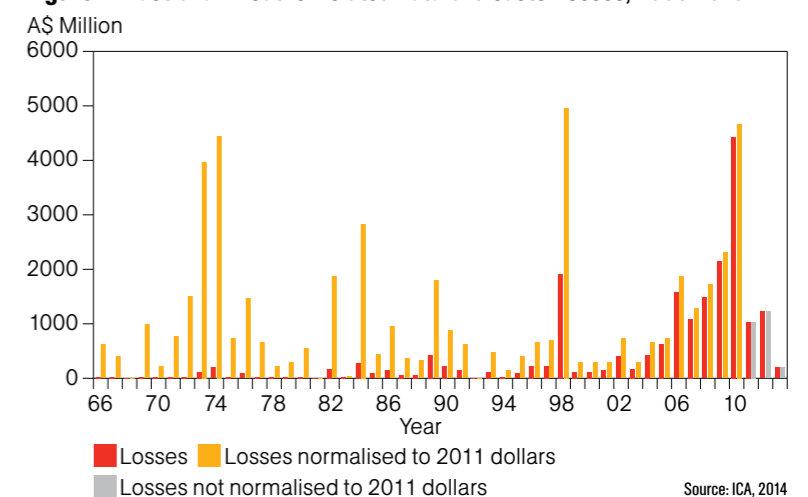
Fatalities from natural hazards

A glimpse at human fatalities caused by natural hazards is revealing.

In a similar vein to building-loss data, an analysis of the number of human fatalities per year should be normalised to take into account population growth. Figure 2 (see page 32) shows fatalities from bushfires, earthquakes, floods, wind gust, hail, landslides, lightning, rain, tornadoes and cyclones in Australia from 1900 to 2010. A line through the raw data on this figure would show no significant trend, i.e. the fatality rate has been constant across time, while a line through the normalised data, Figure 3 (page 32), shows a highly significant decreasing trend, amounting to around 0.7 deaths per year over the past 110 years. This finding is in line with research on global natural disasters,³ which indicates human fatalities are either constant or decreasing.

Natural hazard fatalities from 1900 to 2011 as recorded in PerilAUS are shown in Table 2 (see page 32).

Figure 1 Australian weather-related natural disaster losses, 1966-2013.



Source: ICA, 2014

Table 1 Major Australian disaster losses in dollar terms^{1,2*}

| Event | Overall ranking | Year | Normalised cost |
|-------------------------|-----------------|------|-----------------|
| Sydney hailstorm | 1 | 1999 | AU\$4.3 billion |
| Tropical cyclone Tracy | 2 | 1974 | AU\$4.1 billion |
| Newcastle earthquake | 3 | 1989 | AU\$3.2 billion |
| Queensland floods | 5 | 2011 | AU\$2.5 billion |
| Ash Wednesday bushfires | 7 | 1983 | AU\$1.8 billion |

* The largest Australian natural disasters (in terms of normalised insured losses) of each type, 1967-2013, normalised to 2011 dollars. Source: Crompton, 2011; Data source: ICA, 2014

Since 1900 more people in Australia have died as a result of extreme heat than from the effects of all other natural hazards combined.⁴

What more can be learned about losses caused by natural hazards?

This project has the potential to reveal significant information about losses due to natural hazards. This might include the following:

- Temporal and spatial analyses of building loss data for each hazard will provide a natural priority ranking of hazard risks for each state or territory.

Figure 2 Australian natural disaster fatalities, 1900-2010.

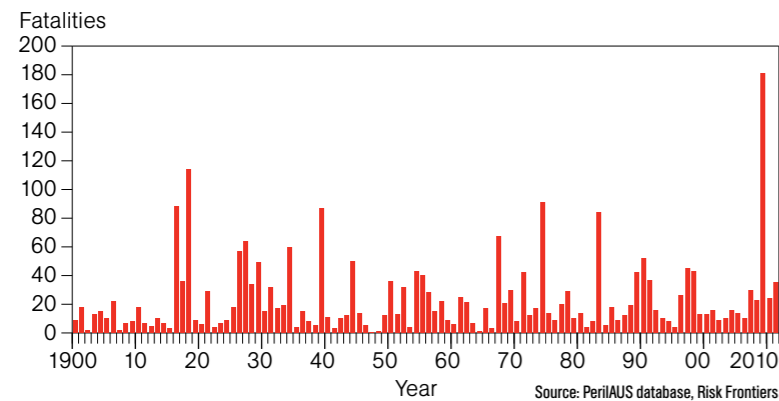


Figure 3 Australian natural disaster fatalities, 1900-2010 data normalised to 2010 numbers.

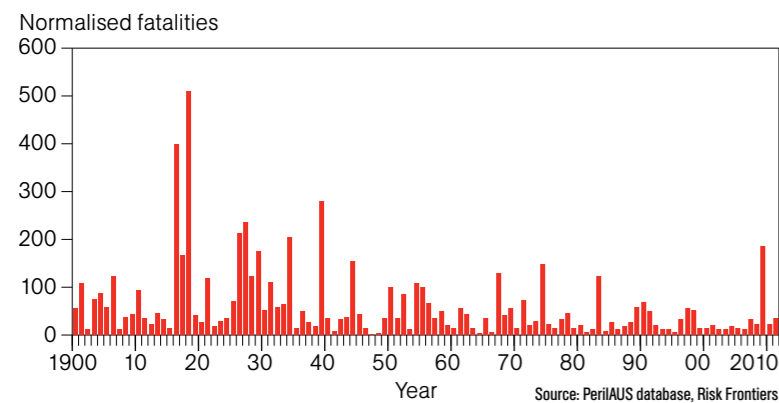


Table 2 Natural hazard fatalities in Australia, 1900-2011*

| Natural hazard | Deaths 1900-2011 | % Total natural hazard deaths 1900-2011 |
|------------------|------------------|---|
| Extreme heat | 4,555 | 55.2 |
| Tropical cyclone | 1,285 | 15.6 |
| Flood | 1,221 | 14.8 |
| Bush/grassfire | 866 | 10.5 |
| Landslide | 88 | 1.1 |
| Lightning | 85 | 1 |
| Windstorm | 68 | 0.8 |
| Tornado | 42 | 0.5 |
| Hailstorm | 16 | 0.2 |
| Earthquake | 16 | 0.2 |
| Rainstorm | 14 | 0.2 |

* Data source: Coates et. al., 2014

- An analysis of changes to the frequency and intensity of occurrence of hazards across time will help us understand what might be expected in the future.
- Updating PerilAUS with mortality data (from various coronial archives, the Australia Bureau of Statistics and the Bureau of Meteorology), and morbidity data (from state and territory health departments, for example) will provide a first-of-a-kind platform for further analyses to examine the relationships between:
 - demographics
 - social circumstances (warnings received, preparation, reasons behind actions, activities at the time of death etc)
 - environmental circumstances at the time of the onset of the disaster (location, weather, hazard details etc).
- Past vulnerability and exposure trends will be interpreted in the context of emerging issues (e.g. an ageing population, population shifts and climate change) in order to determine potential future vulnerability and exposure trends.
- A case-control study involving a survey of people who successfully reduced their risks and received little impact from an emergency, and those who did not reduce their risk and consequently received fatalities or injuries, or required rescues, will offer insights into resilience in practice.
- Interviews with key senior emergency management practitioners and government policy-makers will identify the policy and procedural changes that have been implemented over the years to reduce risks to people and property. A comparison of this information with key trends within the fatality, injury and property loss data will enable an analysis of the impact that various changes to policy and procedures have had.

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THE NEXT STEPS FOR ACCREDITING THE FIRE PROTECTION INDUSTRY

By **Leo Mautone**
Accreditation & Licensing Manager,
FPA Australia
and **Denise Friend**
Special Projects
FPA Australia

FPA Australia has added two new classes of accreditation under FPAS.

In July 2013 FPA Australia launched its voluntary Fire Protection Accreditation Scheme (FPAS) with the introduction of accreditation for individuals in the Inspect and Test class of fire protection work.

Now that the Inspect and Test class has been successfully embedded, with approximately 700 individuals accredited, FPA Australia is pleased to formally announce the next two classes of accreditation under FPAS: Fire Systems Design and Fire Systems Certification.

Other classes of accreditation that will come onstream over time include Install and Commission, and Maintain. You do not need to be a member of the Association to become accredited.

Two new accreditation classes

In February 2015, applications are expected to open for individuals seeking accreditation in Fire Systems Design and Fire Systems Certification activities in the fire protection industry. Initially, the scheme will focus on three categories for Fire Systems Design and Fire Systems Certification activities associated with the following essential safety measures as shown in Table 1.

Table 1 The first three categories of accreditation available under the new FPAS classes.

| Category | Fire Systems Design | Fire Systems Certification |
|---------------------------------------|---------------------|----------------------------|
| 1. Fire sprinkler systems | ✓ | ✓ |
| 2. Fire hydrant and hose reel systems | ✓ | ✓ |
| 3. Fire detection and alarm systems | ✓ | ✓ |

Additional categories will be included under the two new classes in the future, such as 'Exit and emergency lighting' and 'Passive fire protection'.

FPAS is a national accreditation scheme for the fire protection industry. The scheme recognises the appropriate levels of skills, knowledge and competency of fire protection professionals across various classes of fire protection activities. Accreditation under FPAS is not a substitute for any current requirements for licensing, registration or accreditation established by relevant applicable legislation (state, territory and/or federal) unless otherwise confirmed by relevant regulation.

Fire Systems Design

This accreditation class will accredit individuals who perform design activities relating to fire sprinkler systems, fire hydrant systems and fire detection and alarm systems.

This class of work covers the preparation of designs to a required standard, where the final design documentation outlines the requisite design criteria and provides documentation for procurement, manufacture, construction, installation and commissioning by competent personnel.

The scheme defines the scope of activities for an individual performing fire systems design work as being able to competently:

1. define scope, hazard level and extent of fire systems design projects
2. plan layout of the fire system design
3. prepare detailed technical designs and documentation including plans and/or specifications for systems and equipment (including material and installation requirements, testing and commissioning schedules, project expenditure schedules and operations and maintenance manuals).

The activities related to the scope of work above include developing a design brief, analysing all of the design requirements including researching products, finalising detailed documentation including procurement, manufacture, construction and installation, commissioning and maintenance on the equipment relating to the system design. All these activities must be in line with jurisdictional standards and satisfy any other relevant legislative or licensing requirements applicable to the design of fire protection systems.

Three accreditation pathways

The Fire Systems Design class has three individual accreditation pathways for entry into the scheme:

1. Qualified
2. Experienced (transitional)
3. Trainee (transitional).

The Qualified pathway requires an individual to hold an appropriate qualification recognised as acceptable under FPAS plus the required units of competency and a minimum of two years experience working as a fire systems designer for the category of work being applied for.

Fire Systems Design

Install and Commission

Fire Systems Certification

Inspect and Test

Maintain

FPAS accreditation classes.

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The Diploma of Fire Systems Design is the current national qualification recognised under the scheme, together with other suitable qualifications that have been identified as acceptable and having the required underpinning competencies.

Qualifications that meet the scheme's requirements by having the required underpinning competencies include:

- Diploma of Fire Systems Design
- Certificate IV or Diploma in Fire Technology
- Graduate Certificate, Graduate Diploma or Master in Fire Safety Engineering
- Certificate IV or Diploma in Plumbing and Services
- Diploma in Hydraulic Services Design
- Diploma, Advanced Diploma or Degree in Mechanical Engineering
- Diploma, Advanced Diploma or Degree in Electrical Engineering.

The Experienced (transitional) pathway refers to an individual who has relevant fire systems design experience with a minimum of four years working as a fire systems designer in the relevant category.

The Trainee (transitional) pathway applies to an individual working under direct supervision* in the fire protection industry while undertaking approved formal qualifications relevant to the category being applied for.

Both of these pathways provide transitional accreditation arrangements and allow a four-year transition period for individuals to gain the qualification.

Fire Systems Certification

This class of work covers the formal validation and certification that states the properties and performance of installed and commissioned systems have fulfilled the specific requirements to meet the fire systems design criteria.

Note that this process is the initial system certification of the installed system. It is not the annual post-construction certification process whereby a practitioner validates that the installed system is still capable of performing to the original design and installation requirements.

The scheme defines the scope of activities for an individual performing fire systems certification work as being able to competently:

1. assess installed systems and equipment for compliance with the approved design while having regard to:
 - applicable legislation, codes and standards
 - variations or specific requirements of approval authorities
 - commissioning tests and approval documentation
 - manufacturer's specifications and product compliance documentation.

2. prepare an audit report and certification of compliance of installed fire systems and equipment, declaring that the system will operate and perform as per the approved design.

The activities related to the scope of work above include the research, review and analysis of the design of the fire system and ensuring the installed/constructed system and products used fulfil all the design and performance standards. A fire systems certifier must also verify that the design solution and products meet design and installation requirements, and the system products and equipment are constructed and installed in accordance with finalised design documentation and are 'fit for purpose'. The fire systems certifier must check the commissioning procedure and performance results that validate the system performance to the required standards and ensure all the appropriate documentation supports required evidence that the system meets all design and future maintenance criteria so that certification of the system can be issued.

Two entry pathways

As there is currently no national qualification or courses that provide an individual with the skills, knowledge and competencies suitable for Qualified recognition under FPAS, the first phase of the Fire Systems Certification class will initially be launched with two pathways for entry into the scheme:

1. Experienced (transitional)
2. Trainee (transitional).

FPA Australia continues to pursue discussions and explore the options available for progressing existing qualifications to provide a suitable competency outcome that can support qualified Accreditation under FPAS in the future.

In the meantime, the Experienced (transitional) pathway will provide entry for an individual into FPAS for the recognition of experience, skills and competencies in fire systems certification work.

The Trainee (transitional) pathway will allow an individual accreditation while working under direct supervision* and undertaking approved formal qualifications relevant to the category being applied for. As for fire systems design, experienced and trainee accredited individuals will have four years to gain qualifications and the required units of competency.

With the release of these additional FPAS classes, FPA Australia continues its commitment to the protection of life, property and the environment from fire and its support of the fire protection industry and individuals on their continuing journey to professionalism. ■

*Under direct supervision of an FPAS Qualified or Experienced individual in the same category.

Consultation workshops will occur in early 2015. To learn more about the Fire Systems Design and Fire Systems Certification classes of accreditation, or for more information about FPAS, visit www.fpa.com.au/fpas.

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People react in different ways to risk and hazard.

LIFE ON THE EDGE— THE HUMAN FACE OF BUSHFIRE RISK

By Brenda Leahy
Communications
Officer, AFAC

The risk of bushfire is increasingly becoming a fact of life for growing numbers of Australians choosing lifestyles in fire-prone urban fringe and rural areas.

Some householders and property owners live with the threat of bushfire for up to six months of the year, depending on a range of factors such as where they live, the local landscape and climate as well as changing and occasionally extreme bushfire weather.

While the nature and extent of bushfire hazard differs dramatically by location and weather, fire agencies and emergency management authorities face the same challenge: engaging people in the process of risk awareness and preparedness processes.

Their main goal, according to Damien Killalea, Director of Community Fire Safety at the Tasmania Fire Service, is motivating people to act to ensure their survival, safeguard their properties and protect their livelihoods. In turn, this outcome helps reduce the impact of a natural disaster when it hits, and helps with recovery.

Addressing this community safety challenge was the focus of research by the Bushfire CRC over the past decade. Co-developed with the emergency

management sector, this significant body of work investigated all aspects of community safety to help the sector understand where and how things can be improved to mitigate risk and protect lives.

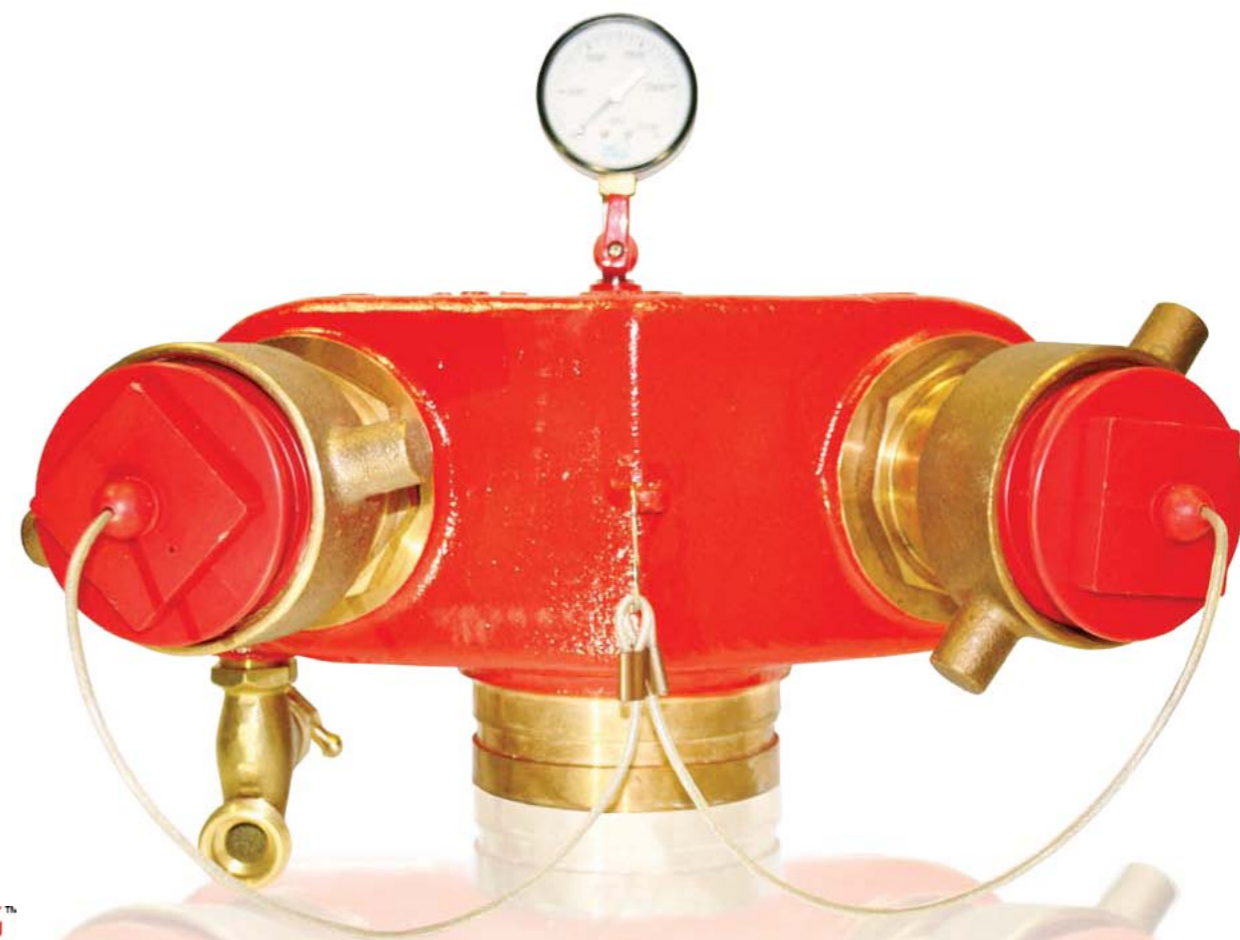
The studies, according to Mr Killalea, have consistently confirmed that people and households have different information needs and respond in different ways to risk and hazards. This helps, in part, explain the findings of recent post-bushfire research that shows people in bushfire-prone areas typically have a survival plan of sorts, but do not write it down. People generally wait for the visible signs of bushfire (such as smoke and flames) before making decisions about what they will do, and do not act on early warnings of extreme weather conditions to leave for places of safety.

While the cumulative outcomes of the research deliver new insights into factors such as response to risk, decision-making and preparatory action, they also

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underline that there is no one-size-fits-all solution or a silver bullet, according to Mr Killalea. As a lead end user of the research, he has been a key industry adviser on the Bushfire CRC research utilisation program and now advises the Bushfire and Natural Hazards CRC.

“The research, however, does offer more clues, insights and a sense of direction for agencies to consider when refining their current community safety practices and developing future plans relevant to their communities, their unique risks, challenges and demographics,” Mr Killalea said.

“It also contributes to the ongoing development of emergency response, service delivery, alerts and warnings across the spectrum of emergency processes from prevention through to recovery.”

Thinking Under Fire findings

More recently the research focus has shifted to the human-behaviour aspects of risk response and decision-making under threat and the characteristics that determine bushfire preparedness. Some of that research featured in the recent final Bushfire CRC Research to Drive Change forum, *Thinking Under Fire*.

The forum unlocked new insights into how people respond to risk and shed light on some of the factors that shape their responses.

Key findings include:

- Householders in fire-prone communities prepare with different goals in mind. These goals include: evacuate successfully; stay and defend the property; or evacuate if forecast conditions warrant, leaving the house in a fire-resistant condition. The researchers provided a checklist and measurement tool for researchers and agencies to help householders determine whether they are on target to achieve these goals. The findings have been published in the *International Journal of Wildland Fire*.
- Some communities appear to prepare more than others for bushfires. This national study reveals that individual factors, rather than community-wide factors, determine the degree of preparedness within

People delay or avoid making decisions when under stress.



PHOTO: CFA STRATEGIC COMMUNICATIONS

a community. Peer pressure in the form of social norms may influence individual preparedness, as may individual involvement in community-level education groups or initiatives. Aggregate community perception of bushfire risk, based on the community's prior experience with bushfire, can influence preparedness.

- Information about bushfire risk can be overwhelming. People react in different ways. In particular, people with a tendency towards anxiety have an associated tendency to interpret information negatively. In a bushfire risk context, with heightened anxiety comes increased intention to act, but no action on mitigating the risk or threat.
- People delay or avoid making decisions when under stress. When coupled with uncertainty, these factors can lead to decision paralysis and inaction.

Mr Killalea said further work on the implications of the research was being undertaken in consultation with the emergency management sector through AFAC's Community Safety Technical Group.

Want to know more?

These studies were featured in the recent *Thinking Under Fire* forum, the final forum in the Bushfire CRC's Research to Drive Change online forum series. All ten forums and associated resources including videos, *Fire Notes* and research reports, are available online at www.bushfirecrc.com.au/drivechange. Other key resources include a synthesis of community safety research by the Bushfire CRC over 10 years. ■

Now that the Bushfire CRC has ended, developments in utilisation of Bushfire CRC research will be available through AFAC's website at www.afac.com.au/services/utilisation. The Bushfire and Natural Hazards CRC is building on this bushfire work, and expanding it to all natural hazards. More information is available at www.bnhcrc.com.au



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PREPARING CHILDREN FOR DISASTERS

By **Nathan Maddock**
Communications
Officer, Bushfire
and Natural
Hazards CRC

A Bushfire and Natural Hazards CRC project is examining how educating children on how to be resilient in the face of a natural disaster can flow on to mobilising an entire community.

Enabling kids to become active participants in disaster resilience and education programs could not only reduce their fears, it could also have a potential motivational role in mobilising wider community preparations.

That's according to Bushfire and Natural Hazards CRC project leader Kevin Ronan, a Professoriate Research Fellow at CQUniversity.

Professor Ronan is leading the *Building best practice in child-centred disaster risk reduction* study, which also involves researchers from RMIT, Monash and Massey universities, Risk Frontiers and Save the Children Australia. The project will carry out research on current policy, practices and evaluation frameworks. In building on research conducted in Australia, New Zealand and other countries, the research will also increase the attention given to children and their families' needs in disasters.

Educating children about how they can reduce the risk of disasters like bushfire is crucial.



“Kids are an untapped community motivational reservoir.”



PHOTO: JOHN MCCOMBE, NEW ZEALAND FIRE SERVICE.

This study will help to increase the attention given to kids and their families if they're affected by a disaster, such as the family home being destroyed.

“There are hundreds, if not thousands, of disaster-resilience education programs for kids worldwide, including many in Australia, which are not evaluated,” Professor Ronan said.

“Most of the research on these programs is short term—we do not know if these programs translate into saving lives, reducing injuries or reducing the psychological consequences of disasters. Nor do we know if these programs can save governments money.

“Our research is examining if programs do translate into saving lives, reducing injuries and other consequences, while saving government money, how can we get them to be part of policy and scaled up in a large way?”

Professor Ronan notes that there are two main reasons why educating children about disaster-risk reduction is important.

“It reflects the societal value we have around protecting children. In any given disaster worldwide, according to the World Health Organization, children represent 30–50% of the deaths. They are also the most at-risk group psychologically. Kids can carry impacts for a long time, and this can have an immense effect.

“The second reason is about children's right to increasingly participate in their own and their community's life. Preliminary research has shown that kids are motivated and get benefits for themselves and their families from learning about disaster-risk reduction. We think this is because disasters typically rank in the top ten major fears of childhood. When you help equip human beings with tools to deal with fears, and turn threats into challenges, people typically respond well. This includes children and youth.

“In other words, when you can turn a fear on its head and say that it is a problem with solutions, kids are interested and get excited about that.”

Professor Ronan said educating kids about disaster-risk reduction can have flow-on effects within communities.

“Kids are an untapped community motivational reservoir. Prevention and preparedness for a disaster is usually at a very low level in most communities, so we need to increase motivation for preparedness. We feel like kids are one such source.”

Research published over the past decade has shown that children are better equipped to deal with an emergency if they have been active participants in disaster resilience and education programs.

“This study is designed to evaluate the extent that education can equip children and families to prepare, respond and recover more effectively from some unanticipated event, including its potential flow-on effects for the larger community,” Professor Ronan said.

“The goal is to make a policy and practical difference. We want to know what works and then help to get it implemented on larger scales.”

The project is also linked to initiatives at the United Nations (UN), with the CRC as the Australian coordinator for the UN Integrated Research on Disaster Risk National Committee. Professor Ronan represented the CRC at Integrated Research on Disaster Risk meetings



Professor Ronan outlines the study at the 2014 Research Forum in Wellington, NZ.

in November 2014 in London and Paris and at UN headquarters in Geneva. The meetings were part of the planning process for the next Hyogo Framework for Action, which will be announced at the third UN World Conference on Disaster Risk Reduction in Sendai, Japan in March this year.

“We are pretty privileged to be part of the international conversation and we are going to seize the opportunity. There are plans for our ideas and project to be included as a part of a public seminar at the Sendai conference,” Professor Ronan said. ■

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HOW CAN COMMUNITIES AND AGENCIES WEATHER THE STORM?

By Nathan Maddock
Communications Officer, Bushfire and Natural Hazards CRC

As emergency management becomes increasingly all-hazard focused, community warnings and coordination between agencies becomes more vital. New research by the Bushfire and Natural Hazards CRC will assist partner agencies across Australia and New Zealand communicate more effectively and bounce back from natural disasters.



PHOTO SUPPLIED

Communication and coordination can help communities and agencies bounce back from emergencies.

Why do people in vehicles get stuck in raging floodwaters despite repeated 'if it's flooded, forget it' warnings from emergency services and media? Why do some people stay and some people go when a bushfire is bearing down on their home?

CRC researchers at the Queensland University of Technology (QUT) are building on previous community warning research for bushfire and expanding it into other hazards. A new project, *Connecting communities and resilience: a multi-hazard study of preparedness, response and recovery communications*, is set to find out how people assess the risks of an unfolding natural disaster and use that to decide on their response to events like cyclones and bushfires.

Their aim is to fine-tune the design of emergency warnings and updates to ensure people understand the instructions and act appropriately to minimise injury and loss of life, and improve the recovery phase of natural disasters.

Professor Vivienne Tippett from QUT is leading the project, and leading the cluster of research projects on communications and warnings in the CRC. The cluster encompasses five projects on risk communication.

"The aim of the *Connecting communities and resilience* project is to partner with end user

agencies to design effective communication that motivates people to act to protect their lives and others during and immediately after a natural disaster," Professor Tippett said.

"Because people receive warnings from each other, news, social media and the emergency services, there can be challenges about who to trust and how to behave as the natural disaster unfolds around them.

"We want to examine how people engage with emergency warnings and how psychology and the law can influence that process to guide the development of innovative digital and communication campaigns that ultimately protect lives," Professor Tippett explained.

Bouncing back from disasters

QUT's Dr Paul Barnes is co-research leader of the *Emergency management capability* cluster, in which he is leading a project investigating the capabilities agencies need to invest in now in order to work better individually and together in the future.

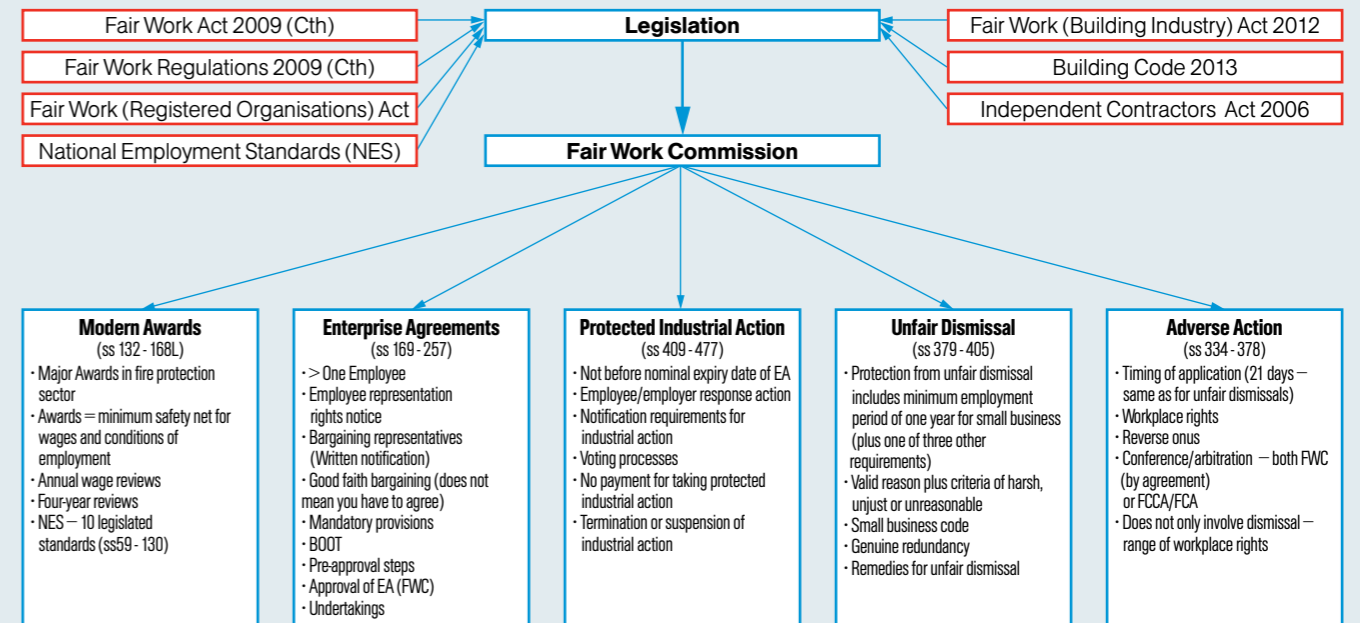
"Multiple agencies must coordinate and work together to enhance response[s] and to help people and communities recover quickly from the effects of natural disasters," Dr Barnes said.

"In Queensland in 2010 and 2011, for example, when 80% of the state was disaster-declared after a series of floods and cyclones, bridges were down, roads were impassable, food wasn't getting through, and people couldn't get to work.

"We need to ensure the best and most efficient coordination possible for applying the resources and operations of agencies such as [departments of] housing and families, members of the insurance industry, fire and emergency management, and health at the local, regional and statewide [levels] in real-time.

"This study will focus on how best we might integrate these agencies' response and recovery efforts so communities can be back on their feet as soon as possible.

"And, because natural hazards are more frequent and severe than ever before, we may well have to do more with less and look at investment and planning for disaster scenarios we have not faced yet by considering what conditions will be like in five and ten years to come and detail the coordinated capability needed to deal with them," explained Dr Barnes. ■



FAIR WORK FRAMEWORK—INFORMATION FOR EMPLOYERS

By Richard Krajewski
Workplace Relations Manager, FPA Australia

As has been promoted in other Association communications, FPA Australia has established a Workplace Relations Department to support and assist its members and the industry across a range of workplace relations areas. While those areas are identified and accessible, it is nevertheless an important component of the service to help members understand, among the various pillars of workplace relations, how Australia's industrial relations framework functions.

Many readers would have an understanding of various aspects of workplace relations. However, there may be others who may require added clarity.

To that effect, the chart above attempts to provide a summary of various connections within the federal industrial relations system. Here we see a combination of industrial laws and how the Fair Work Commission, a tribunal with various powers and functions conferred on it by the Fair Work Act 2009 (Commonwealth), applies its powers and functions.

While the chart does not set out employer obligations, it sets out some key elements of the Act and those that can readily impact on members of FPA Australia. These are summarised in the chart, which provides brief details of each element:

- Modern Awards—minimum safety net and links with the National Employment Standards
- Enterprise Agreements—processes involved in the negotiating, making and approval of Agreements
- Protected Industrial Action—in association with enterprise bargaining

- Unfair Dismissal—together with requirements, tests and obligations to be applied
- Adverse Action—the importance of decision-making and the principle of reverse onus of proof.

To assist with explanations of the importance of these elements, we see for example that Modern Awards and their interaction with Enterprise Agreements highlight the obligation to ensure that employees covered by an Enterprise Agreement are better off than if they were employed under a Modern Award (the relevant Modern Award). Here the better off overall test applies. It is also important to know that it is the good faith bargaining principle that is applied but that does not mean that an employer, for instance, has to agree to a union proposal. Protected industrial action is legal industrial action and certain obligations apply. Protected industrial action can also include industrial action on the part of an employer—such as a lock-out.

With Unfair Dismissal and Adverse Action (General Protection), certain procedural courses of action are required. However, the fundamental principle of procedural fairness is to be applied. Evidence that procedural fairness was applied will assist the employer in circumstances where an employee or former employee claims a remedy for alleged unfair dismissal or adverse action (for having a workplace right in the case of an adverse action claim). For more information about Workplace Relations visit www.fpaa.com.au or call 03 8892 3131. ■



THE GREAT HYDRA-MATIC FIRE

1953

By Barry Lee OAM

The General Motors Hydra-Matic transmission plant in Livonia, Michigan, USA, burnt to the ground on 12 August 1953. Hydra-Matic made transmissions not only for GM products but also for competitors Lincoln, Hudson, Kaiser and Nash. The four-year-old, almost undivided 140,000 m² plant was a total loss. According to *Fortune* magazine¹ 3,318 machines powered by 25,000 motors were in the building at the time of the fire. It was the worst industrial fire in US history up to that time and is still ranked as the worst fire in the history of the automotive industry.

Sparks from a cutting torch ignited a conveyor drip pan containing flammable rust inhibitor for transmission parts. The fire extinguishers on hand quickly

ran out. When fire reached the plant's combustible roof, fumes from melting tar filled the ceiling space with flammable vapours, allowing fire to flash the full length of the building. With the sprinkler system hopelessly overrun (only 20% of the plant was sprinkler protected), the entire plant was ablaze in less than 20 minutes. Amazingly only three people died in the fire—all were in-house fire brigade members. One Livonia firefighter died of a heart attack. GM and Lincoln were able to continue producing cars following the fire, but smaller competitors such as Hudson, Kaiser and Nash had to suspend operations for nearly nine weeks.

The building construction consisted of a steel frame with exterior brick apron walls and an insulated steel deck

roof. The roof insulation was asphalt-saturated felt covered by a tar and gravel outer surface. The fire exposed the previously unrecognised hazard presented by a bituminous roof system applied directly to a metal deck.

Production of automobile automatic transmissions entailed metalworking, heat treating (furnace and quench tanks) and rustproofing—all operations involving combustible liquids or gases. ■

In 1954, General Motors announced that all new GM manufacturing facilities were to include fire barriers in the form of firewalls, parapets and draught curtains, and almost 100% sprinkler protection supplemented by spray nozzles for dip tanks, quench tanks and drip pans. Many other industrial organisations also adopted these requirements for new facilities.

References

1. Harris, W.B., 'The Great Livonia Fire', *Fortune*, November 1953.

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Fire Australia 2015 Conference and Exhibition Delivering a Fire Safe Future: the right choices for product compliance and approval

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About the conference

Fire Australia 2015 is the premier fire protection industry conference, attracting a wide range of representation from businesses, government and fire safety practitioners.

Regular attendees of the conference will notice it has moved from a November schedule to March. This is to move away from peak conference season, thus providing the opportunity for more industry personnel to attend.

Building on the success of the last conference and exhibition, Fire Australia 2015 will once again provide delegates the option of attending multiple streams over two days.

The streams will provide a mix of presentations focusing on industry-wide and industry-specific topics. The industry-specific streams will cover the key industry sectors of early warning and detection, fire suppression, passive fire protection, evacuation and emergency management and bushfire.

Presentations will address current issues, industry direction and challenges, and technical content relevant to those with an involvement in the fire protection industry.

The exhibition will once again be a main feature of the event, located centrally at the conference. Sponsors and exhibitors have the opportunity to present their products and services within the exhibition hall. These presentations will occur during breaks in the plenary sessions.

With speakers from across Australia, as well as overseas, FPA Australia aims

to ensure all presentations are topical and current, affording attendees across all roles in the fire protection industry additional knowledge and information.

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- Building surveyors
- Environmental engineers and sustainability managers.

For more information about Fire Australia 2015, visit the conference website at www.fireaustralia.com.au.

Australian and New Zealand Disaster and Emergency Management Conference Earth, Fire and Rain 4–5 May 2015

Gold Coast Convention and Exhibition Centre

The Bushfire and Natural Hazards CRC is a partner in this all-hazards conference, this year themed Earth, Fire and Rain. The conference will include a focus on research, while maintaining an interest on showcasing contemporary innovation and approaches to disaster and emergency management. It will be useful for a wide range of people in the disaster and emergency management community.

More information is available at www.anzdm.com.au.

AFAC and Bushfire & Natural Hazards CRC Conference New Directions in Emergency Management 1–4 September 2015

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For more information visit www.afac.com.au/conference.

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3–6 February—Queensland
10–13 February—Tasmania
17–20 February—South Australia

For more information, visit the [Training & Education pages at www.fpa.com.au/training](http://www.fpa.com.au/training).

By Kevin Burns

Technical Administrator, FPA Australia

TAC/1 Maintenance of fire protection systems and equipment

TAC/1 continues to discuss a number of matters in regards to maintenance. In particular, TAC/1 is focused on the amendment to AS 1851-2012 with the FP-001 kick-off meeting for this project held in late November.

TAC/2 Fire detection and alarm systems

TAC/2 continues to discuss a number of technical documents including a document on frequently asked questions about smoke alarms. The TAC also continues to contribute to the ongoing work of FP-002.

TAC/3/7 Portable and mobile equipment

TAC/3/7 has recently lodged two Standards Australia project proposals. The first is to review and update the requirements set by AS 2444 *Portable fire extinguishers and fire blankets—Selection and location* to review and update the requirements when it was published in 2001. The second is for an amendment to AS/NZS 1850 *Portable fire extinguishers—Classification, rating and performance testing* to address ethanol-blended fuels, among other minor issues.

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

The Position Statement on water storage tanks for fire protection systems is to be published shortly. The TAC also continues to work on documents on isolation valves for fire sprinkler and fire hydrant systems and on fire hydrant testing.

TAC/11/22 Special hazards fire protection systems

The Standards Australia project to revise AS 5062 held its kick-off meeting in late November and TAC/11/22 is working on its contributions to this project. Work on the Information Bulletin on oxygen reduction fire prevention systems continues with a draft provided to the national office.

TAC/17 Emergency planning

Information bulletins on evacuation diagrams and consideration of emergency response in alternative solutions are to be put to the TAC for endorsement with the aim of publishing these in early 2015.

TAC/18 Fire safety TAC/19 Passive fire protection

The November TAC/18 and TAC/19 meeting was postponed with the meeting rescheduled to allow these TACs to consider comments for the FPA Australia public comment submission on the draft revision of AS 1905.1 *Components for the protection of openings in fire-resistant walls—Part 1: Fire-resistant doorsets*, recently released for public comment.

TAC/20 Bushfire safety

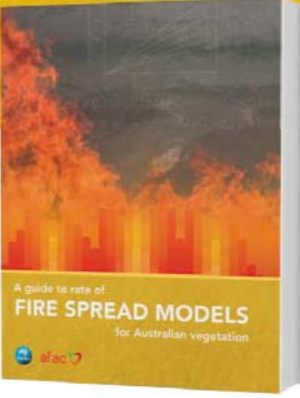
FPA Australia and TAC/20 have submitted

comments on the recent NSW Rural Fire Service review of the 10/50 Vegetation Clearing Scheme and associated Code of Practice, which were out for public comment. TAC/20 continues to discuss a number of technical documents on topics including sarking, water spray systems and shelters.

TAC/T

No TAC/T meeting was held in November. However, work on the Technical Advisory Note on working in hazardous areas (explosive atmosphere) continues, with a draft provided to the national office. ■



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– Euan Ferguson AFSM, Chief Officer,
Country Fire Authority, Victoria

By Kevin Burns

Technical Administrator, FPA Australia

FP-001 Maintenance of fire protection equipment

The kick-off meeting for the project to amend AS 1851-2012 was held in late November and confirmed the scope of the project and project milestones.

FP-002 Fire detection and alarm systems

The revision of AS 3786 *Smoke alarms* is anticipated to be published soon.

The direct text adoption of ISO standards for audible alarm devices (ISO 7240-3), visual alarm devices (ISO 7240-23) and sound system loudspeakers (ISO 7240-24) have now all been to public comment, closing in mid to late November.

FP-002 continues to work on the revisions of AS 1670.1 and AS 1670.4.

FP-004 Automatic fire sprinkler installations

The revision of AS 2118.1 *Automatic fire sprinkler systems—General systems* continues to progress.

FP-009 Fire hydrant installations

FP-009 has now completed its review of the 1300-plus comments received on the draft revision of AS 2419.1 *Fire hydrant installations—System design, installation and commissioning*. The draft is being updated accordingly and, due to the large number of comments, will be released again for public comment as part of a combined process (public comment and ballot) in late first-quarter 2015. This means the FP-009 committee will also be voting on whether they support publication of the draft as-is (noting that any further comments from the public comment will still need to be addressed).

FP-018 Fire safety

The kick-off meeting for the project to revise AS 1530.8.1 and AS 1530.8.2 (testing of elements of construction for buildings to simulate bushfire attack) was held in October, where it was proposed that a joint meeting be held with FP-020 to confirm the scope and timeline for the project.

FP-019 Passive fire protection

The draft revision of AS 1905.1 *Components for the protection of openings in*

fire-resistant walls—Fire-resistant doorsets was released for public comment, closing on 30 January.

FP-020 Construction in bushfire prone areas

The kick-off meeting for the project to revise AS 3959 *Construction of buildings in bushfire-prone areas* was held in late September. Another meeting was held in December to finalise the scope of the revision and to work with FP-018 to confirm the scope and timeline for the revision of AS 1530.8.1 and AS 1530.8.2.

FP-022 Fire protection of mobile and transportable equipment

The kick-off meeting for the project to revise AS 5062 *Fire protection for mobile and transportable equipment* was held in late November.

LG-007 Emergency lighting in buildings

LG-007 continues to revise the AS 2293 suite of standards for emergency escape lighting and exit signs. These revised standards are nearing public comment stage.

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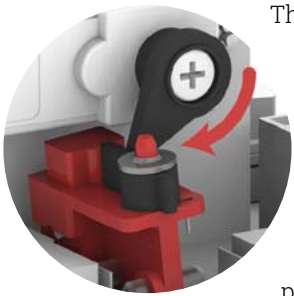
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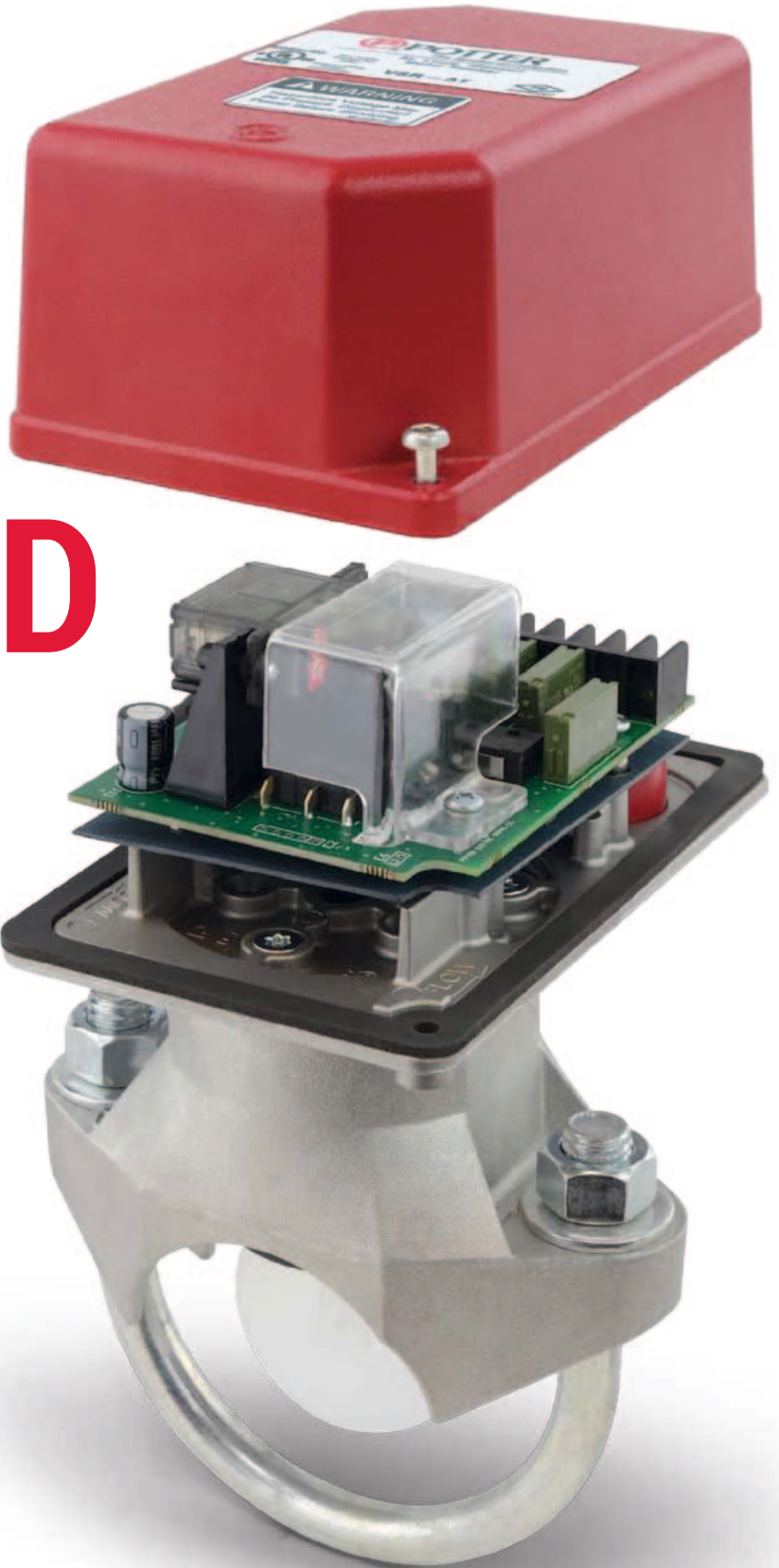
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