

# AUSTRALIA Fire



## THE IMPORTANCE OF RECORDING MAINTENANCE

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CONTINUES  
TO DELIVER**

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# AUSTRALIA Fire



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Fire Australia is a joint publication of the Fire Protection Association Australia (FPA Australia), the Australasian Fire and Emergency Service Authorities Council (AFAC) and the Bushfire and Natural Hazards Cooperative Research Centre (BNHCRC).

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.

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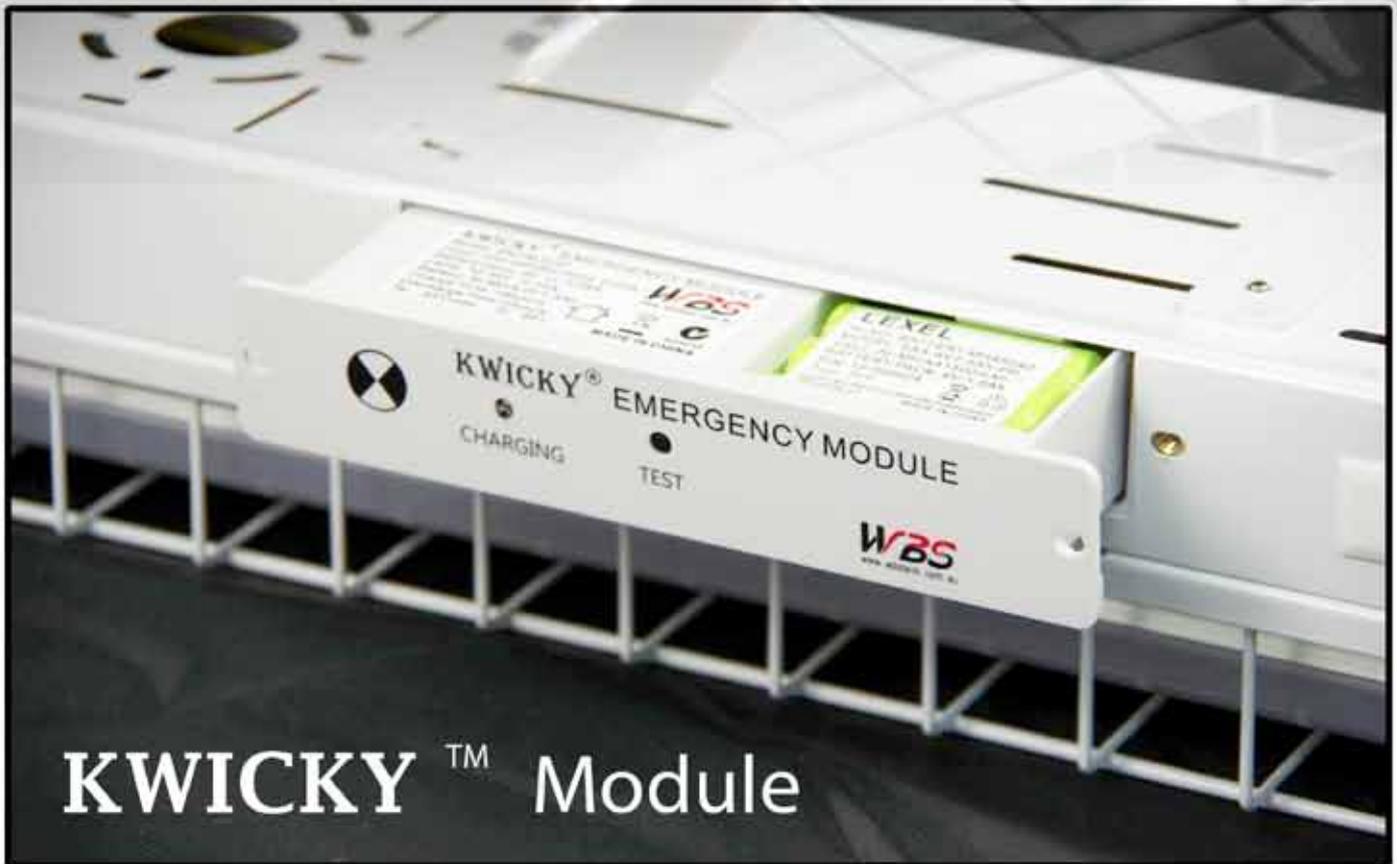
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# AIIMS CERTIFICATION FOR FIRE AND EMERGENCY SERVICES



**By Stuart Ellis AM**  
Chief Executive Officer,  
Australasian Fire and Emergency Service Authorities Council (AFAC)

**A**FAC is committed to improving the capacity of our agency personnel, as well as our industry as a whole. We have recently sought to achieve this through increasing professional development opportunities for our sector. Through numerous seminars, workshops and forums across Australia, we have sought to increase access to knowledge sharing and best practice. Recently we have reached more than 1,000 stakeholders from across the fire and emergency services, as well as other invited organisations, learning from such varied events as gas pipeline explosions, floods, emergency evacuation and incident management simulation.

Further to these opportunities, the annual AFAC and Bushfire & Natural Hazards CRC conference, to be held in September 2014 in Wellington, New Zealand, is also designed for delegates to share experience, research and analysis from across the sector. The conference will enable a deeper understanding of emergency management issues and approaches facing the region. This year's program includes 16 leading international and New Zealand-based speakers, as well as a range of industry experts, together presenting more than 90 sessions across the four days.

AFAC is also enhancing individual and agency capacity through the national certification of incident management. This is part of a professional pathway being developed for fire and emergency service personnel. While 'accreditation' of personnel to conduct incident management roles and the authority to appoint individuals to incident management teams remain with agencies and jurisdictions through the legislative authority given to Commissioners and Chief Officers, AFAC will establish 'certification' requirements centred on experience, education, ethics and examination of individual achievement.

These requirements will be set by an industry Certification Panel, establishing professional standards around Australasian Inter-Service Incident Management System (AIIMS) roles and over time, further developing them. This will formally recognise, as an industry, what we already achieve in Incident

Management Team participation. This formal recognition across paid, part-time and volunteer staff is likely to commence in late 2014 and is expected to take three to five years to fully implement. It is voluntary for individuals to seek national certification and the AFAC Board is overseeing the entire approach and process.

This is a significant national project for the fire and emergency services industry. There is strong commitment across the AFAC Council to proceed, while acknowledging the potential improvements in capability, enhancements to interstate support and the significant professional credence individuals will gain. Further updates will be communicated as they become available.

Finally, I would like to acknowledge the tremendous efforts of the Bushfire CRC over the last 10 years in partnering with AFAC and FPA Australia to publish this magazine. The CRC will cease operating on 30 June 2014. In turn we warmly welcome the Bushfire and Natural Hazards CRC to their first joint publication of *Fire Australia*. I hope you enjoy this edition. ■



AFAC will soon establish national certification requirements around incident management roles.

# USING LIFTS FOR EVACUATION—CHALLENGES, MANAGEMENT AND PLANNING

AFAC, with the support of the Society of Fire Safety, recently completed a national seminar series that saw more than 200 delegates explore the challenges, management and planning for the use of lifts during evacuation. The event, proudly sponsored by Adair Evacuation Consultants and Olsson Fire & Risk, was designed to bring together industry leaders, fire safety engineers, emergency planning consultants and building owners to discuss issues pertaining to evacuation.

The recent introduction of Performance Requirement DP7 in the National Construction Code has introduced a new era of safe accessibility for disabled people and others who find using stairs either impossible or challenging. For the first time the building code explicitly addresses and discusses a viable means for the emergency evacuation of people in need. However, the lack of a deemed-to-satisfy approach to DP7 means the design community has no simple means to safely introduce this new use of lifts.

The seminar identified how the design community can address DP7 by taking into account the associated issues of fire brigade intervention, equality and dignity for people with a disability, and challenges

facing the lift manufacturer, including the need to protect lifts against smoke, fire and water. The many issues that a fire safety engineer must address when developing an appropriate alternative solution were also discussed. These issues varied from human behaviour to basic building design.

"We believe that the planning for use of lifts in an emergency is a joint effort from all stakeholders throughout the planning, construction and occupation stages of the project", said Craig Watkins, General Manager of Adair Evacuation Consultants and sponsor of the event series.

"The use of lifts in an emergency will be a complete mindset change for generations of people and this may cause complications if we do not recognise the issues and determine the correct management strategies to overcome them or prevent their occurrence," Mr Watkins continued.

The seminar also included presentations on Australian Standard AS 3745, in particular Amendment 1: Planning for emergencies in facilities, and Australian Standard 1851 Section 14: Maintenance of fire protection systems and equipment. The focus of these sessions was to discuss the impact of the standards as they relate to the lifecycle of emergency planning and evacuation using lifts.

Finally, AFAC and the Society of Fire Safety are evaluating the need for continuing education and training on the topic. They are investigating the interest and need for a comprehensive seminar or symposium in the first half of 2015 and the production of appropriate instructional videos or webinars on the topic.



Queensland Fire and Rescue Commissioner Lee Johnson (centre), alongside presenter Jonathan Barnett, Society of Fire Safety (left), and sponsor Trevor Thompson, Adair Evacuation Consultants (right), after opening the Brisbane seminar.

For more information about the event series or associated standards please contact Jacob Riley, Project Officer Community Safety, AFAC by email at [jacob.riley@afac.com.au](mailto:jacob.riley@afac.com.au).

bushfire CRC

RESEARCH TO DRIVE CHANGE  
Sharing outcomes. Building knowledge.

## RESEARCH TO DRIVE CHANGE

The Bushfire CRC is taking an important step to make sure research findings from the past three years are accessible to a range of audiences.

It is producing a number of documentary-style videos, and conducting online forums for partner agencies around Australia and New Zealand, to stimulate discussion and raise awareness of the various projects and their outcomes. The forums began in May and will continue until September.

Topics include community safety, next generation fire modelling, extreme fire behaviour, firefighter health and safety, ecology, incident management and economics to help decision-making.

The online forums are a practical approach that will enable as many agency staff, volunteers and researchers as possible to participate. Importantly, each video and forum will be accessible in the future, along with Bushfire CRC's *Fire Notes* newsletter and more in-depth research reports, leaving a strong legacy.

The Bushfire CRC is excited to communicate this important body of work, and believes it is an important step in achieving the recognition the science deserves.

For more information about upcoming forums and to replay all past forums, go to [www.bushfirecrc.com/drivechange](http://www.bushfirecrc.com/drivechange).

# AFTER DISASTER STRIKES, LEARNING FROM ADVERSITY

## AUSTRALASIA'S PRE-EMINENT EMERGENCY MANAGEMENT CONFERENCE

Join peers from across the emergency services and research sectors for the 2014 AFAC and Bushfire & Natural Hazards CRC conference in Wellington, New Zealand, to be held at Shed 6 and TSB Bank Arena. This will be Australasia's largest emergency services and public safety conference and trade exhibition.

The conference, to be held 2–5 September 2014, is designed for delegates with a responsibility for, or involvement in, emergency management. It is the principal gathering of emergency management practitioners, technical experts and researchers in our region.

This year's theme is 'After disaster strikes, learning from adversity'. Natural and man-made disasters strike all countries, but particularly in our region. The conference will give delegates the opportunity to examine how emergency management services, land managers and communities prepare, respond to and assist with disaster recovery, as well as develop evidence-based policy and practice for the future.

### Conference program launch

New Zealand Fire Service Chief Executive and National Commander, Paul Baxter, officially launched the full speaker program in Melbourne on 30 April 2014. "It has got everything you could possibly hope for: it's a really exciting program. The conference just continues to develop, going from strength to strength", Mr Baxter said.

This year's program includes 16 leading international and New Zealand-based speakers, as well as a range of industry experts, together presenting more than 90 sessions over the four days. The trade exhibition will then expand on the wisdom of the speakers

by showcasing a range of the industry's most innovative products and services.

AFAC Chief Executive Officer, Stuart Ellis, said this year's conference theme was designed to bring delegates together to share the combined wisdom of experience, research and analysis from across the sector as well as enable a deeper understanding of the approaches needed to secure the region's future prosperity.



New Zealand Fire Service Chief Executive and National Commander Paul Baxter launches the conference program.

Earlybird registrations close 27 June 2014. For more information or to download your copy of the program please visit the AFAC website at [www.afac.com.au/conference](http://www.afac.com.au/conference).

### ON THE GROUND AFTER BUSHFIRES

Bushfire and Natural Hazards CRC researchers have been out in communities affected by summer bushfires in South Australia and Western Australia, conducting community-based research.

Following from similar work in New South Wales after large fires in October 2013, the researchers from CQUniversity and the University of South Australia have been in the regions of Bangor, Eden Valley and Rockleigh in South Australia. University of Western Australia and La Trobe University researchers have

been on location around Parkerville, Stoneville and Mount Helena in Western Australia.

This important research, undertaken at the request of the South Australia Country Fire Service and the Western Australian Department of Fire and Emergency Services, will add to data collected in 2013 in NSW, along with similar studies by the Bushfire CRC following Black Saturday in 2009, WA's Perth Hills and Lake Clifton fires in 2011 and Tasmania's Forcett fire in 2013.

   
**AFAC14**  
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LEARNING FROM ADVERSITY  
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#### KEY ACTIVITIES

- 1-day all hazards Research Forum: 2 September
- 2-day conference: 3-4 September
- Gala Dinner: 3 September
- 5 Professional Development Workshops: 5 September
- 4 Field Study Tours: 5 September

The conference will explore the following major themes:

- Climate, Landscape and Environment
- Impact of Disasters
- Supporting our People Through Adversity
- Building Capability
- Involvement of Emergency Services in Recovery
- Resilience

Early bird registrations close 27 June 2014  
Full conference program and to register  
[www.afac.com.au/conference](http://www.afac.com.au/conference)



## EXCITING NEW FEATURES FOR FIRE NOTES

If you have noticed that Bushfire CRC *Fire Notes* now look a bit different, you would be correct. To assist you to organise, share and act, *Fire Notes* now have new features. Beginning with *Fire Note* 121, these features will be included in all feature editions.

*Fire Notes* now have topics—these will help direct who you should share the *Fire Note* with. These topics are also aligned with the work of AFAC Collaboration Groups. Topics are viewable on the top right of the front page.

Share it! Like a *Fire Note* and want to tell others how they can benefit from the science? You can now share *Fire Notes* directly through Facebook and Twitter. Just click the icons on the bottom right of the front page.

Get more! Did you know you can receive new *Fire Notes* straight to your inbox? Subscribe for free by clicking the icon on the bottom right of the front page.

Now what? To help you get the most out of each *Fire Note*, simple activity sheets are now available online. These activity sheets will enable you to consider the key issues raised by a *Fire Note*, the impact this could have and what you could do about it. The activity sheets are highlighted at the end of each *Fire Note*.

The *Fire Note* section of the Bushfire CRC website has also been reworked, enabling you to search all *Fire Notes* by published date and topic. *Fire Notes* can also be found on the AFAC website.

To access *Fire Notes* activity sheets, go to [www.bushfirecrc.com/firenotes](http://www.bushfirecrc.com/firenotes).

## DISASTERS IN MAY

The Bushfire and Natural Hazards CRC display was a popular destination for participants at the Australian and New Zealand Disaster and Emergency Management Conference.

*Earth, fire and rain* was the theme of this year's conference, held on the Gold Coast on 5–7 May.

The CRC hosted an exhibition booth and provided several speakers on the program.

The conference program included multiple streams with 26 poster presentations, 10 informative workshops and more than 70 presenters, as well as an all-encompassing exhibition showcasing equipment, products, services and solutions.

CRC keynote speakers on the program included:

- Dr Paul Barnes, Deputy Director

- and Leader, Infrastructure Program, Centre for Emergency & Disaster Management; and Co-Lead Researcher, Emergency Management Capability Cluster, Bushfire and Natural Hazards CRC
- Dr Michael Eburn, Barrister, Associate Professor, ANU College of Law, The Australian National University
- Dr Mel Taylor, CRC researcher and Senior Research Fellow, Centre for Health Research, School of Medicine, University of Western Sydney

Dr Taylor presented a poster on her project 'Managing Animals in Disasters (MAiD): Improving preparedness, response and resilience through individual and organisational collaboration'.



Researchers at the display. From left, Dr Mel Taylor, Dr Penny Burns, CEO Dr Richard Thornton, Dr Michael Eburn and Mr Greg Eustace.

## SAW IT AT THE MOVIES

The research of two Bushfire CRC PhD students has been captured in informative short videos. Mika Peace (Bureau of Meteorology) was a state finalist in South Australia at FameLab, an international science communication competition.

See her video detailing how 3D interactions between fire and atmosphere influence bushfire behaviour at [www.bushfirecrc.com/resources/external-resource/famelab-australia-application](http://www.bushfirecrc.com/resources/external-resource/famelab-australia-application).

Brenda Mackie (University of Canterbury) entered the Cooperative Research Centre Association's Early Career Researcher competition, summing up her PhD thesis in 30 seconds.

Learn all about warning fatigue really quickly at [www.bushfirecrc.com/resources/external-resource/warning-fatigue-real](http://www.bushfirecrc.com/resources/external-resource/warning-fatigue-real).





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## ALL AS 1851-2012— LOGBOOKS NOW AVAILABLE

All AS 1851-2012 logbooks and summary record books are now available for order. FPA Australia has created 13 logbooks (one site per logbook) and three summary record books (30 sites per summary record book).

These books are aligned to the corresponding sections in AS 1851-2012 and AS 2293-2005. Newly released books include the all new *Passive fire and smoke systems* (LB12, SR12A and SR12B) and *Emergency escape lighting and exit signs* (LBE1 and LBE2).

Orders are currently being delivered and those interested are encouraged to order now, as stock is limited. For more information about the new logbooks, check out the article on recording maintenance on page 14 of this edition of *Fire Australia*.

To order, download the order form at [www.fpaa.com.au/sales](http://www.fpaa.com.au/sales). For more information about all logbooks and summary record books please call 03 8892 3131.

## NEW FPA AUSTRALIA PATRON— HIS EXCELLENCY GENERAL THE HONOURABLE SIR PETER COSGROVE



FPA Australia is proud to announce that His Excellency General The Honourable Sir Peter Cosgrove AK MC (Retd) has accepted the Association's invitation to be our Patron.

His Excellency has indicated he is pleased to accept the role and sees the work of FPA Australia as complementary to his responsibilities as Governor General. In addition, he has noted that fire protection and safety in Australia are of personal interest to him.

FPA Australia has a history of patronage from Governors General. Sir Paul Hasluck PC, GCMG & KSTJ was our first Patron, followed by successive Governors General, including, until she recently stood down, Her Excellency Dame Quentin Bryce AC.

Sir Peter has a strong history of community involvement during emergencies, including as taskforce leader during Cyclone Larry in 2006. FPA Australia is honoured to receive patronage by His Excellency and we look forward to his involvement with the Association over the years to come.

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## NEW DEPARTMENT AND NEW SERVICES AT FPA AUSTRALIA

FPA Australia has recently announced one of the most significant changes at the Association in recent years—the creation of a new department, Engagement & Education. This new department integrates all of the Association's activities within its events, education and state and territory engagement areas.

This transformation allows much of the work previously undertaken by three separate departments to be consolidated into one: this means a simpler offering and better outcomes for members and the community.

The department will be managed by Mr Chris Wyborn, who has worked as a senior technical officer at the Association since December 2011. Mr Wyborn had previously spent 10 years with the Country Fire Authority in Victoria in a role that included managing a team responsible for fire safety in the building, planning and dangerous goods areas.

Over coming weeks you will see many changes at FPA Australia, including new branding and marketing materials for Engagement & Education.

FPA Australia is certain of strong improvements in the way the Association's activities are integrated, implemented and delivered. These improvements will be ensured by adding more administrative staff at the FPA Australia National Office.

At the same time FPA Australia is also expanding its services with a suite of new workplace relations and human resources options being added.

To assist in delivering these important new services, the Association has employed a full-time Workplace Relations Manager: Mr Richard Krajewski. Richard has 35 years' experience in the Australian workplace and employee relations sectors and holds a Master of Law and Legal Practice. Most recently he was employed by Chubb Fire & Security to provide workplace relations advice, a role he undertook for six years. With Richard's assistance, FPA Australia will be able to offer a wide range of workplace and employee relations services.

Keep an eye on the FPA Australia website [www.fpaa.com.au](http://www.fpaa.com.au) for more information about the new department and new services as they come on stream.

## NEW BUSHFIRE RISK MANAGEMENT POLICY FOR WA

The Minister for Planning and the Western Australian Planning Commission (WAPC) have released the *State planning policy 3.7: planning for bushfire risk management* (SPP 3.7) and a supporting document titled *Planning for bushfire risk management guidelines* for public consultation.

The proposed policy and revised guidelines will supersede the current *Planning for bush fire protection guidelines* (WAPC 2010).

The changes, which FPA Australia has made strong contributions to, will take effect from 1 May 2015 and will see mandatory bushfire provisions introduced for new homes in bushfire-prone areas (as identified in the Building Code of Australia and AS 3959).

A bushfire hazard assessment will be required if the land intended for development is located on a bushfire-prone area

map or is close to a large area of bushland. The assessment will identify the bushfire risk level and the Australian Standards to be applied when the new home is constructed.

WAPC is now seeking comment on the draft SPP 3.7 and the revised guidelines. The public comment period for the SPP closes on Friday 4 July 2014. The revised guidelines will be released in draft form for three months and submissions close on Friday 1 August 2014.

A copy of SPP 3.7 and the revised guidelines, along with a submission form and frequently asked questions, can be accessed at [www.planning.wa.gov.au/publications/7055.asp](http://www.planning.wa.gov.au/publications/7055.asp). The Department of Planning is currently conducting public information sessions on the bushfire policy framework. Email [technical@fpaa.com.au](mailto:technical@fpaa.com.au).



Mandatory bushfire provisions have been introduced for new homes in bushfire-prone areas in the Western Australian *State planning policy 3.7: planning for bushfire risk management*.

## FPA AUSTRALIA SUBSCRIPTION INTRODUCED

From July 1, 2014 FPA Australia will be introducing a subscription service available to persons interested in receiving communications material from the Association, but who do not require the other benefits of membership.

At the same time, the Association is removing what was formerly known as Associate level of membership, meaning Associate members now have the option to transition to another membership level, or take up a subscription.

This change will be rolled out as Associate memberships expire over the coming year.

FPA Australia produces the flagship quarterly industry magazine *Fire Australia* as well as a range of newsletters, media releases and important announcements related to the protection of life, property and the environment from the dangers of fire.

All subscribers receive:

- ▶ Quarterly printed editions of *Fire Australia* Magazine
- ▶ Access to previous digital versions of *Fire Australia* Magazine
- ▶ *FireSignals* E-newsletter
- ▶ All FPA Australia newsletters
- ▶ Access to previous digital versions of newsletters
- ▶ Subscription to all FPA Australia email communications, latest news and industry updates
- ▶ Access to the FPA Australia CONNECT platform

The subscription service is priced at \$77.00 per annum (inc gst) and is ideal for students, regulators, bushfire professionals, designers, architects and land use managers, facility managers and anyone with an interest in the fire protection industry.

To find out about an FPA Australia Subscription please contact [member@fpaa.com.au](mailto:member@fpaa.com.au)



## RESEARCH GETS ON A ROLL

The Bushfire and Natural Hazards CRC research program kicked off in March with 170 project end users and researchers attending the establishment Research Advisory Forum (RAF) in Adelaide.

The RAF provided the first opportunity for CRC partners, project leaders and end users to work together, gain a complete overview of all planned research activities within the CRC, and commence the process of shaping the future of each of the 36 projects.

The National Wine Centre of Australia provided a dramatic backdrop for the long day of presentations. As host partner for this first forum, the University of Adelaide welcomed everyone to the venue through Pro-Vice Chancellor (Research Strategy) Professor Rob Saint.

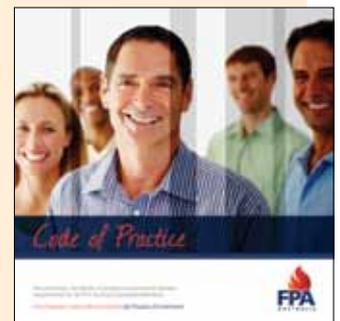
The Research Advisory Forums will be invaluable for ensuring each project receives regular feedback and ongoing support. Forums will be held twice a year, with each project reporting on its progress annually.

All presentations from this forum are on the Events page of [www.bnhcrc.com.au](http://www.bnhcrc.com.au).

## NEW FPA AUSTRALIA CODE OF PRACTICE RELEASED

FPA Australia is proud to announce the release of the long awaited new Code of Practice (the Code). The new Code sets out the principles, standards of behaviour and service delivery requirements for all FPA Australia Corporate members.

The Code is currently being rolled out, meaning from now on, as Corporate members come up for renewal, they will be mailed the new version of the Code and asked to adopt it. The Code has been significantly amended to reflect the expectations, needs and nature of the modern fire protection industry. The new Code is also much easier to read and navigate. An innovative new tab structure means that readers can quickly and easily locate specific sections of the Code.



You can view the new Code of Practice online at the FPA Australia website. Go to [www.fpaa.com.au/membership](http://www.fpaa.com.au/membership) and select "become a member".

For all member enquiries related to the new Code please email [member@fpaa.com.au](mailto:member@fpaa.com.au).

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# THE IMPORTANCE OF RECORDING FIRE PROTECTION SYSTEM AND EQUIPMENT MAINTENANCE

Building owners and/or occupiers must routinely maintain a building's fire protection systems and equipment and keep hard copy records as evidence of such maintenance. FPA Australia has produced new logbooks that comply with AS 1851-2012 *Routine service of fire protection systems and equipment*, as well as AS 2293.2 *Emergency evacuation lighting for buildings*. These logbooks make it clear and easy to record all necessary information.

By Joseph Keller  
and  
Chris Wyborn,  
FPA Australia

Undertaking and documenting regular routine service of fire protection systems and equipment to ensure they remain 'fit for purpose' is an important fire safety objective that is enshrined in legislation in every Australian state and territory. Moreover, there is a community expectation that installed fire protection systems and equipment will work if they are required to, even if this only occurs once in the lifetime of a building.

Australian Standards AS 1851 and AS 2293.2 detail the recording and reporting requirements for most fire protection systems and equipment, and emergency evacuation lighting for buildings, respectively. This article provides an overview of the record-keeping requirements of these standards and the release of new logbooks and summary records to suit the 2012 edition of AS 1851 and the current edition of AS 2293.2.

## Why record maintenance and retain records?

Fire protection systems and equipment are nominated safety equipment, fittings, systems or management measures provided in, or for, a building that are required in the event of fire or other emergency to protect against loss of life or property. Examples of fire protection systems and equipment include automatic fire sprinklers, smoke control systems and fire indicator panels.

Each state and territory's legislative and regulatory framework requires or expects that servicing of these systems and equipment be recorded in accordance with the relevant standard called up by the legislation.

All of these building and planning regulations require that maintenance of these systems and equipment be undertaken, but also require evidence of this work, such as records of maintenance. Beyond the legislative requirements, however, there is also a common law duty of care held by building owners (and by extension, building and facility managers and occupiers) for the safety of occupants. Additionally, service providers will have a contractual obligation to their client and should therefore maintain their own copies of records.

Completing and retaining detailed records of service form an essential part of complying with an owner/occupier's and service provider's legal obligations.

Unfortunately, all too often it is not until something goes wrong or enforcement action is pursued that focus shifts to the need for evidence.

In these circumstances the responsible entity, generally the building owner or occupier, will need to produce records demonstrating that a building or facility has undergone routine service in accordance with regulation and standards and that performance was verified to be in accordance with specific design requirements.

In addition, the service provider may also have to produce their own evidence to demonstrate compliance with their contractual obligations.

Failure to produce records will make it more difficult to defend the actions taken by a building owner, building occupier, their agent or the service provider in any legal proceedings.

Complying fully with the appropriate service requirements of AS 1851 and AS 2293.2, including keeping appropriate records, is one way of demonstrating that you have met your legal obligations should a fire emergency situation arise or enforcement action be pursued.

Section 1.16.2 of AS 1851-2012 requires that service records, including the pass/fail criteria, shall be captured at the time of the routine service. These records may be captured via:

- a hard copy logbook
- an electronic log
- tags and labels with hard copy summary records.

Importantly, the standard requires that, no matter the method of recording, a hard copy of the service record (or a printed and signed copy of the electronic log) must be left on-site at the completion of any testing. Where tags or labels are used, a printed and signed paper-based copy of the summary record must be provided within one week of the date of service.

Note that, in general, logbooks will be used in situations where service technicians are testing and inspecting an integrated fire protection system such as an automatic sprinkler system or smoke detection system. Summary records, on the other hand, generally apply to fire protection equipment such as portable fire extinguishers or fire blankets.

The standard goes on to specifically address the

Opposite: This extract highlights the many different sections of the new forms contained in a typical logbook.

# HOW TO USE THE AS 1851-2012 LOGBOOKS

**LB2A Automatic Fire Sprinkler Systems – Wet Pipe Systems**  
**Monthly Service Record – Page 1 of 1**

Your service provider is: \_\_\_\_\_

**Record** service provider details here, using a stamp or handwriting. Books with pre-printed company information available soon.

Unique number and barcode assigned to each logbook form.

CB-AA10000101

Site Name: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Work Order No.: \_\_\_\_\_

Site Address: \_\_\_\_\_ Time: \_\_\_\_\_ Site ID: \_\_\_\_\_

**Record** site details here (site name; site address; site ID number; date of service; time of service and order number).

Item No.	Actions required by Table 2.4.2.1	Pass	Fail	N/A
	All previous defects and non-conformances attended to and	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Control valve assembly is unobstructed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Fire sprinklers and spanner are available	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Check for damage, legibility and location	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Brigade booster connection is operational	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.5	Check main stop valves and alarm cocks are open, secured and labelled	No. checked <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.6	Check pump starting devices are open and secured	No. checked <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.7	Check pressure switches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.8	Check alarm signalling equipment (ASE)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.9	Check sprinkler system interface status	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.10a	Verify water supply stop valves are open and secured	No. checked <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Item No.	Actions required by Table 2.4.2.1	Pass	Fail	N/A
1.10b	Verify water supply stop valve position indicators	No. checked <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.10c	Verify each valve monitor indicates at CIE	No. checked <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.11	Record and verify system pressure gauge readings before alarm function test ( <b>record in table below</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.12	Conduct alarm function test and verify time of operation gong(s) ( <b>record in table below</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.13	Verify alarm signal operation	No. checked <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.14	Check operation of strobe indicators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.15	Record and verify system pressure gauge readings after alarm function test ( <b>record in table below</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.19	Check foam concentrate levels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.16 & 1.17	Test automatic and manual pump starting devices in accordance with item 1.13 and 1.17 of Table 3.4.1. Record results in pumpset logbook.	No. of devices checked Auto <input type="checkbox"/> Manual <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Summarised actions from corresponding service schedules in the relevant standard. **Record** here as pass, fail or not applicable.

**Record** results of actions here. Where results are more complex or need to cater for multiple systems or components, record results in specified sections below.

Alarm function test results	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9	No. 10	No. 11	No. 12
Installation pressure before test – 1.11 kPa												
Time to operation of alarm gong – 1.12b Secs												
Installation pressure after test – 1.15 kPa												

Pressure readings 1.15	Location 1	Location 2	Location 3	Location 4
Below Stop Valve kPa				
Water Supply 1 kPa				
Water Supply 2 kPa				

Associated / Connected Equipment Service Completed	Yes	No	N/A	If No or N/A, indicate reason below
Monthly pumpset	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Monthly water storage tank (Item 1.18)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Monthly CIE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

**Record** defects, repairs, notes or recommendations here. (Requires corresponding action statement item number and defect type.)

**Record** here if routine service of associated equipment has been completed where a system relies on other systems or equipment to perform correctly.

Activity / System Failures & Comments

Defect Type Identified

- 1 – Critical Defect
- 2 – Non Critical Defect
- 3 – Non Conformance
- 4 – Recommendations

Declaration that the system or equipment has been serviced in accordance with the respective standard. Includes a disclaimer that completion of routine service is *not* confirmation that neither the fire protection system or equipment nor the building is fully compliant with all applicable building and fire safety legislation.

Notes section that can link the primary service record to additional Notes Pages in which to **record** additional defects, repairs, notes or recommendations.

**Record** technician details here (name, signature and service date).

I declare that the information on this service record is true and correct. This record does not infer compliance with all applicable building and fire safety legislation within the relevant jurisdiction.

**QUEENSLAND BUILDINGS ONLY** Maintenance complies with QDC, MP6.1   
 System is in proper working order

Technician Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

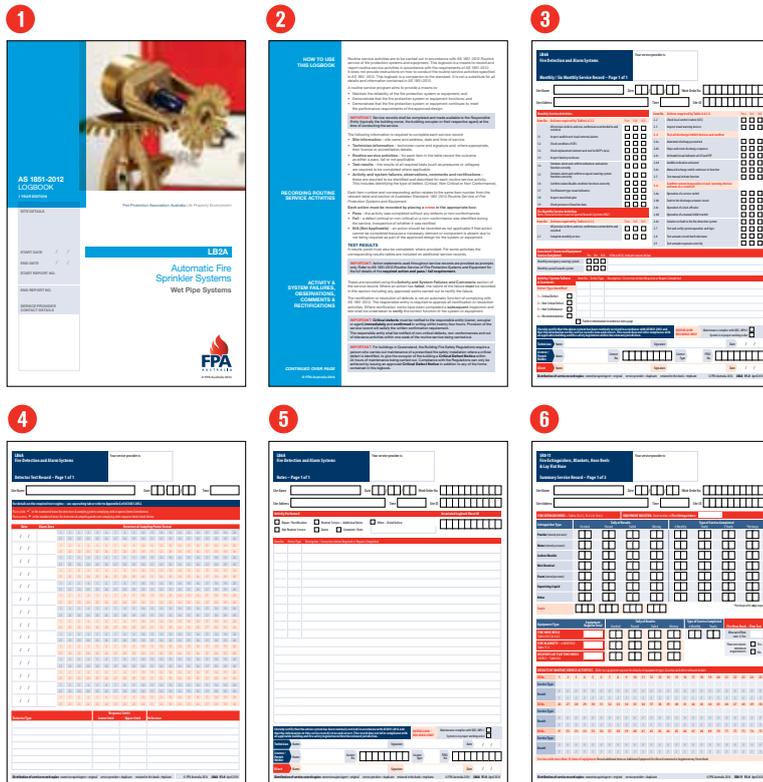
Licence / Permit Holder Name: \_\_\_\_\_ Licence No.: \_\_\_\_\_ Licence Type: \_\_\_\_\_ FPAS No.: \_\_\_\_\_

**Record** licence/permit holder details here (name, licence number, licence type and FPAS number).

Client Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

**Record** client details here (name, signature and service date).

## Using the new AS 1851-2012 logbooks



- 1 Cover** The cover of each logbook features an image that represents the system or equipment covered. The cover provides room to record site details, start and end date, start and end report number and service provider details. Members can order books pre-printed with company information including a logo soon.
- 2 How-to guide** Each document contains a guide on how to correctly complete the logbook. This includes information on recording the results of routine service activities and the identification and capture of defects, repairs and comments; how to re-order logbooks; and a list of abbreviations.
- 3 Standard service record** Each service record in the logbook represents a specific routine service activity, e.g. monthly, six monthly, yearly and so on. Some scheduled activities require the completion of several service records due to the amount of information contained in the standard. A standard logbook contains enough service records to last for 12 months. Logbooks for those systems that only require a six-monthly service as the minimum frequency are designed to last for three years. All service record forms are printed on carbonless, triplicate paper (with the original copy in full colour); One part of each form is permanently bound in the logbook.
- 4 Supplementary service record** Due to the nature and the amount of detail captured during certain routine service activities, some logbooks contain supplementary service record forms for recording the service results for multiple items. For example, the requirement to record the pass/fail criteria for individual detectors during the yearly service is achieved using a supplementary service record in conjunction with the yearly service record.
- 5 Notes pages** At the end of each logbook are a number of notes pages. They are linked to the primary service record and contain a full page to record additional defects, repairs, notes or recommendations. They may also be used to record non-routine service activities, details of repairs completed or to detail recommendations to the client.
- 6 Summary records** Summary records books provide a summary of the routine service (unlike logbooks, which detail the full results). Each book contains enough forms to record the service of 30 different sites. Unlike logbooks, a summary records book is intended to be kept by the technician and not on-site. As a result the forms are provided in duplicate only. Summary records books are available for First Attack Equipment (a single book for extinguishers, blankets, hose reels and layflat hose) and Fire and Smoke Doors and Fire Compartmentation (barriers and elements of construction).

requirements of logbooks and summary records, including noting that logbooks must contain the name and address of the building or site, the date and frequency of the service performed, the location and identification of installed systems and equipment, each activity performed, details of non-compliance, the name of the responsible entity (owner, manager or occupier), the name and signature of the service person with the date of service and the name of the service provider or company.

### FPA Australia's new AS 1851-2012 logbooks

Many people would likely be aware that AS 1851-2012 can only be used in some jurisdictions and situations (refer to FPA Australia Good Practice Guide, *GPG 03 Adoption and use of AS 1851-2012*).

For those jurisdictions and situations where the new standard can be used, FPA Australia has released a new set of logbooks and summary records. In addition, for the first time, logbooks that comply with AS 2293.2 for emergency evacuation lighting have also been produced. In addition to the new logbooks, FPA Australia will continue to provide logbooks that comply with AS 1851-2005.

Meticulous planning and analysis was undertaken to ensure that these new documents accurately reflect the specific requirements of the standards and strive for best practice in reporting results to end users.

Like many technical documents, AS 1851-2012 and AS2293.2 are not always clear about the requirements of what does and does not need to be recorded. However, FPA Australia's logbooks and summary records are explicitly clear about exactly what data must be documented during routine service. The professional design of the new documents will assist technicians to complete the service records accurately and will allow end users to fully understand the results, including any remedial actions required to ensure compliance.

FPA Australia has invested significantly into the creation of the logbooks to promote better fire protection and safety outcomes for the community, and give peace of mind to technicians and building owners that appropriate inspection and testing is being undertaken in full and that the records of these activities are fully compliant with the relevant standards.

While there is no requirement to use FPA Australia logbooks when inspecting and testing fire protection systems and equipment in Australia and other products are available for recording these activities; it is the view of the Association that its logbooks provide a 'best practice' level of confidence to service providers using them and end users such as building owners and occupiers. ■

To find out more about the new logbooks and summary records or to order, please visit the FPA Australia Sales Centre at [www.fpa.com.au/sales](http://www.fpa.com.au/sales).



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# ENHANCING EMERGENCY MANAGEMENT—A HUMAN FACTORS APPROACH

Human factors research is increasingly playing a role in the operations of emergency management personnel. The modern day challenge is translating human factors research into the ever-evolving emergency management environment.

**By Robbie Savage,**  
 Bushfire CRC and  
 Deakin University  
**and Sandra Lunardi,**  
 Director Workforce  
 Development,  
 AFAC

Agencies tasked with emergency incident management face an increasing number of challenges relating to the all-hazards environment: workforce sustainability, managing health and safety of volunteer personnel and performing in worst-case scenarios. At the same time, the decisions that agency personnel make are under increasing levels of scrutiny. Strategies, responses and decisions are examined internally, externally and legally, as well as by governments, the media and communities. It is critical then that agencies have a strong evidence base to draw on when making decisions and formulating policy and practice.

Human factors broadly refer to the integration of the human worker within their working environment. This incorporates issues relevant to the emergency management domain such as teamwork, decision-making, physical health, fatigue and stress. Emergency management relies on human resources from front-line operators to incident control personnel, who must continually adapt to the evolving operational environment. Accounting for the breadth of personnel and job roles within the emergency services sector, it is imperative that managers are informed on best practices emerging from human factors research.

This project, sponsored by the Bushfire CRC, brings together research institutes from Deakin University; Central Queensland University; the University of Tasmania; and emergency service industry experts and end users. The purpose of the project is twofold. The first stage aims to identify the existing knowledge in human factors, both locally and internationally. Then, the project will communicate the findings among Australasian emergency sector

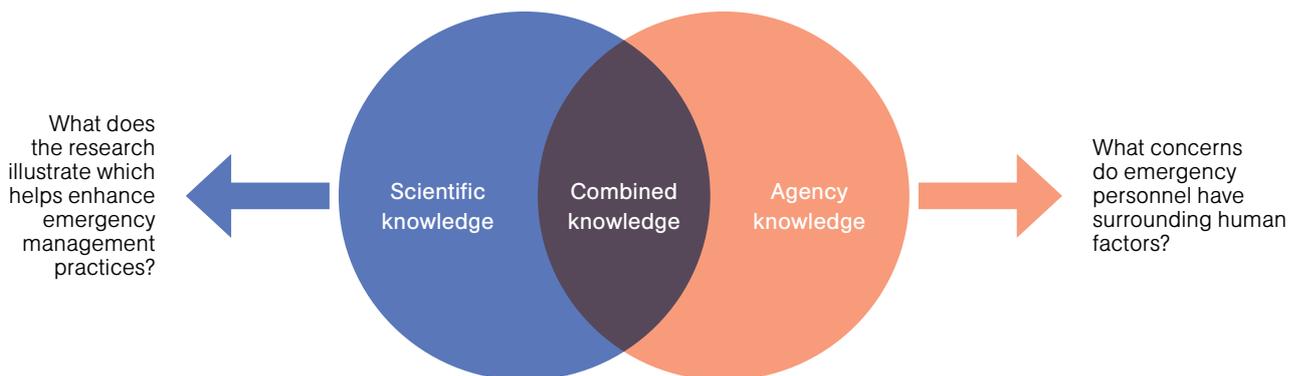
agencies so that best-practice evidence can be practically translated within the sector. Currently the project team has completed the initial stage and is working through the transition of best-practice knowledge within the sector. The following provides summary information on the work to date.

## Synthesising knowledge

The first stage of the project involved acquiring human factors knowledge relevant to the emergency management domain. Scientific research provides a strong bank of knowledge where research findings are heavily scrutinised and formally documented. However, knowledge doesn't have to be written or published for it to exist. Emergency managers and operators acquire vast knowledge in their respective lines of work. The first stage of this project involved harvesting human factors knowledge from both scientific and agency personnel within the sector.

Literature relevant to emergency management from the Australian and international communities was investigated. The literature existed in several formats including peer reviewed publications, reports, conference proceedings, abstracts, presentations, magazine articles and other written text. The literature searches were limited to the past 10 years of research (2004–14), ensuring only the most recent practices were identified. Information from the literature review was then treated in several ways including compilation, summarisation, distillation and elimination. This process ensured only relevant articles were considered for the translation of human factors knowledge.

In parallel with the literature searches, knowledge was sourced from emergency managers working for



**Figure 1** Identifying human factors knowledge



AFAC member agencies around Australia. Managers at the level of Chief Fire Officer or Deputy were interviewed on their thoughts, views and knowledge surrounding current human factors issues. These interviews served to identify barriers that prevent research findings from being incorporated into policy and practice. In addition to the interviews, agency personnel were asked to rank the human factors topics they found to be most important to their organisation.

It was important to compare and integrate the two sources of information (scientific research and agency feedback) as it relates to human factors issues. The purpose of this integration was to identify where the knowledge from the literature aligned with the knowledge of the emergency managers, and where it differed. This integration can be visualised in the Venn diagram shown in Figure 1.

### Findings

The literature searches, in combination with agency interviews, identified in excess of 40 topics relevant to human factors. Following further consultation with relevant stakeholders, 14 of these topics were deemed as being relevant and important for emergency services. These topics were then categorised into two themes: worker protection and well-being; and working environment. The human factors topics belonging to each theme are illustrated in Table 1.

For each topic, summary information was provided on:

- literature findings
- feedback from agency managers
- whether or not there was congruence in these findings.

Take for example the topic ‘Decision making’, which is critical at all levels of emergency management. Findings from the literature illustrate the importance of training operators to develop decision-making skills. Recommendations include training personnel to think like experienced managers, as well as use decision-support systems—these are information systems designed to reduce cognitive demand while making decisions. In contrast, feedback from agencies alluded to the difficulties associated in making fast-paced decisions in an ever-evolving emergency disaster environment. This was cited with particular reference to information overload.

The findings highlighted a number of clear implications for practitioners. In particular, the need for improved decision-making capabilities (agency feedback) and the identification of those systems that help build capability in decision-making (scientific

Human factors research incorporates many issues relevant to the emergency management domain. This includes teamwork, decision making, physical health, fatigue and stress.

**Table 1** Topics covering human factors relevant to emergency management, identified by literature searches and agency interviews

Research theme	
Worker protection and wellbeing	Working environment
Equipment	Decision making
Fatigue	Leadership
Health and safety	Skills and knowledge
Hydration/nutrition	Teamwork
Physical health	Training
Sleep	Volunteerism
Smoke	
Stress	



Decisions that agency personnel make in emergency incident management are under increasing levels of scrutiny.

searches). Both of these findings illustrate a need for learning and development to build industry capability in critical thinking and decision making. These findings also represent a simplified example of where information was used to deliver outcomes. Similar comparisons were performed on all information identified for each of the human factors topics.

### Verifying findings

Once findings had been compared and reported, information was presented to industry stakeholders for verification of results. Senior agency personnel were presented with an online questionnaire that asked a series of questions relating to the 14 topics identified in the earlier stages of the project. A summary of the information for each respective topic preceded the questions. The purpose of this questionnaire was to determine whether industry stakeholders endorsed or rejected the combined findings from the literature searches and agency feedback. Further, it served as a means for identifying current practices and gaps within the sector.

The process of identifying where practices currently do or do not exist was also explored independently. AFAC industry personnel performed a series of mapping exercises that plotted the outcomes of the first stage of the project alongside the currently existing practices or policies. If the outcomes aligned with current practice, then a low priority was assigned for the purpose of developing utilisation resources. If however an outcome was not currently being used within the sector, and was considered relevant, a high priority was assigned for implementation.

### Next steps

The second phase of the project involves the translation of knowledge into emergency practice. It is important that existing knowledge is used in a way that improves current emergency management practices. An ongoing issue in relation to using such an evidence base is that research rarely provides definitive answers. Despite this, there are legal and moral obligations to use the best available evidence in emergency incident management. Often there is a divide between scientific findings and the application of outcomes. The team is currently exploring the most appropriate means of translating the findings. The challenge is to

communicate these findings from an earlier stage in a meaningful, easy-to-digest and practical manner.

To overcome this challenge, the project team is currently consulting with AFAC, the Bushfire CRC and various industry and university partners to outline the pathways of information delivery. Concurrently, work is underway within AFAC to map which of the research findings on human factors have been integrated into AFAC doctrine, position papers, safe work guidelines and existing training competencies and learner resources. This analysis provides an opportunity to identify key areas for further product development that will meet identified gaps. This process should also provide a level of comfort to individual agencies that this strategic analysis is being conducted at a national level by the peak industry body and is thus an efficient means to use research.

As part of its research use initiative, the Bushfire CRC, in partnership with AFAC, has also contracted researchers to develop two comprehensive information products:

#### **1. Decision making under pressure—a resource developed to support professional development, training programs and coaching for incident management teams (IMTs), in particular:**

- people who work in and around IMTs, and personnel in functional roles within IMTs
- trainers who want an introduction to the theory about decision making in order to build their own understanding
- individuals who want professional development in this area.

#### **2. Comprehensive information products to support facilitators who conduct debriefs for operational activities and IMT exercises—the products include:**

- a literature review of published research on the effectiveness of debriefings, including identification of any implications of the research findings for those facilitating debriefs
- a debriefing resource for facilitators to assist them with conducting debriefs and where they may access further resources
- an aide-memoire that supports facilitators to provide critical reflection and shared learning in all review activities.

The outcomes from the first stage of the project will also inform the development of a suite of learning resources, which might include case-study vignettes, online quizzes, checklists and posters for display. Further online learning resources, such as YouTube videos, may be developed at a later stage. In addition there will be guidance notes for agencies to help them review the implications of the findings for their own practice. These notes will assist with the translation of knowledge based on the priorities of individual emergency service agencies. It is not realistic to expect widespread change immediately, as procedural changes take time. However it is important that where meaningful changes can take place, the findings of this synthesis are absorbed by the sector. ■

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# FIRE PROTECTION INDUSTRY (ODS & SGG) BOARD— MARINE INDUSTRY UPDATE



**By Carlos Santin**  
ODS&SGG Board Executive Officer

While some naval and foreign flag vessels continue to employ halon systems the use of halon in coastal vessels in Australia is prohibited.

Since the general phase-out of halons in the marine industry in the 1990s, a variety of alternative fire suppression technologies have been employed for the protection of marine machinery spaces. These technologies include water mist, carbon dioxide, inert gases, halocarbon gases and condensed aerosol systems.

As firefighting concentrations used in carbon dioxide systems present an asphyxiation hazard these systems are now less commonly used than they once were. Inert gas systems, such as IG-01, IG-100, IG-55 and IG-541, whilst suitable for the protection of machinery spaces, do require more storage space than other gaseous system options. Of the gaseous systems available, those using halocarbons and C6-fluoroketone offer the best option in terms of storage space.

Condensed aerosol systems are becoming increasingly popular for marine applications primarily due to the significant weight, space and cost savings over the more traditional gas systems. Water mist systems are commonly used on large ocean

going vessels that fall under International Maritime Organization (IMO) regulations.

The following provides a summary of the international and national legislative requirements for fire systems in different types of naval and foreign flag vessels and information on the fire extinguishing systems and agents used on these vessels.

## Foreign flag vessels

Foreign flag vessels must have fire systems in accordance with IMO requirements, which still permit halon systems on foreign flag vessels. Halon can be purchased from the National Halon Bank in Melbourne or companies that hold a halon Special Permit and an Extinguishing Agent Trading Authorisation.

For more information about disposal of halon products, extinguishers and cylinders, applying for a deposit/disposal fee exemption, purchase of halon and/or for accessing the National Halon Bank halon stockpile, please call the National Halon Bank on 1800 658 084.

Access to supplies of halon for foreign flag vessels is limited to those needing to recharge gaseous fire suppression systems to ensure safe operation. The National Halon Bank can arrange for the safe disposal of contaminated or unwanted halon. Supply should be limited to minimum quantities essential for operation and halon will not be supplied to vessels registered in non-Montreal Protocol signatory countries. A register of these countries is at: [www.environment.gov.au/atmosphere/ozone/legislation/register.html](http://www.environment.gov.au/atmosphere/ozone/legislation/register.html).

In Australia, servicing and refilling systems containing halon or other ODS & SGG extinguishing agents, such as FE-227 or FM-200, must be completed by a technician who holds an Extinguishing Agent Handling Licence. ODS & SGG extinguishing agents such as FE-227 or FM-200 must be obtained from companies holding an Extinguishing Agent Trading Authorisation.

For more information about disposal of halon products, extinguishers and cylinders, applying for a deposit/disposal fee exemption, purchase of halon and/or for accessing the National Halon Bank halon stockpile, please call the National Halon Bank on 1800 658 084.

## Local commercial vessels

The Australian Maritime Safety Authority is the single national regulator for commercial vessel safety. Under the regulations that apply, commercial vessels require fire-extinguishing systems in the engine compartments as per the National Standard for Commercial Vessels, Part C Section 4—Fire Safety. Halon systems should no longer be fitted on these vessels.

Gaseous systems are commonly used; however, condensed aerosol systems are becoming more prevalent. Currently, commonly used ozone depleting substances and synthetic greenhouse gases (ODS & SGG) as extinguishing agents include FE-227, FM-200 and NAF S-III. Technicians working on systems containing ODS & SGG extinguishing agents must hold an Extinguishing Agent Handling Licence.

ODS & SGG extinguishing agents can only be obtained from companies that hold an Extinguishing Agent Trading Authorisation.

For more information about disposal of halon products, extinguishers and cylinders, applying for a deposit/disposal fee exemption, purchase of halon and/or for accessing the National Halon Bank halon stockpile, please call the National Halon Bank on 1800 658 084.

## Private vessels

There are no mandatory requirements for fixed fire-extinguishing systems in private marine vessels. Bromochlorodifluoromethane (BCF), or Halon 1211, extinguishers and halon systems are not permitted and if a fixed extinguishing system is fitted; owners should ascertain what extinguishing agent is used.

In Australia, servicing and refilling of systems containing ODS & SGG extinguishing agents such as FE-227 or FM-200 must be completed by a technician who holds an Extinguishing Agent Handling Licence.

ODS & SGG extinguishing agents such as FE-227 or FM-200 must be obtained from companies holding an Extinguishing Agent Trading Authorisation. ■



In Australia, servicing and refilling of systems containing ODS & SGG extinguishing agents FM-200 must be completed by a technician who holds an Extinguishing Agent Handling Licence.

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2 Core Screened



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4 Core Screened



6 & 10 Core

### FR Power Cable



2 Core & Earth



3 Core & Earth



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Screened



4 Core & Earth



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# FIRE PROTECTION ACCREDITATION SCHEME CONTINUES TO DELIVER FOR BUSINESSES AND THE COMMUNITY



**By Joseph Keller**

Communications Manager, FPA Australia

**M**ore companies around Australia continue to set themselves apart as industry leaders by taking up Fire Protection Accreditation Scheme (FPAS) Business Recognition as their employees achieve the requirements for accreditation. Recently we sat down with Link Fire Managing Director Alistair Nicoll and Statcom Managing Director Tad Jung to discuss their reasons for taking up FPAS Business Recognition.

## **Alistair Nicoll—LinkFire**

### **1. Why did your business apply for business recognition?**

As a company policy over the past 10 years we have put many field staff through a minimum of Certificates II and III in Asset Maintenance (Fire). We have also put staff through whatever training courses in detection and passive fire that became available. This was all done by the company to better the standards of our team and service to our clients. It is great that we now have some recognition for this investment in training our team.

### **2. How do you feel your business will benefit by becoming FPAS Recognised?**

It already has. Some of our well-informed clients have asked about FPAS and were pleasantly surprised when we are able to tell them that LinkFire holds business recognition.

### **3. What kind of message does it send to your staff that you are a recognised business?**

We have really focused on training our staff and I believe they appreciate the resources we have invested in them. It not only improves their knowledge but also helps improve the culture within the company.

### **4. What do you think the impact of FPAS and recognised businesses will be for the fire protection industry in Australia?**

It can only improve our industry, which is in urgent need of a refocus. We need to improve ourselves before the government steps in and forces it on us on their terms.

## **Tad Jung—Statcom Systems**

### **1. Why did your business apply for business recognition?**

Statcom Systems wishes to be recognised as a business that can demonstrate our staff are properly trained and competent to carry out the inspections and assessments for which we have been contracted.

### **2. How do you think being an FPAS-recognised business will set your business apart or help you stand out in the market?**

For larger bids and tenders where some form of accreditation is sought, FPAS will be able to demonstrate Statcom Systems' commitment to having our staff properly trained and to have that training recognised by an industry peak body.

### **3. How do you think your customers will feel knowing that your business is recognised by engaging fire technicians who are accredited under FPAS?**

Our customers will appreciate having their important fire safety equipment and systems serviced by competent and qualified persons employed by Statcom Systems, and knowing that untrained outside contractors will not be used.

### **4. What kind of message does it send to your staff that you are a recognised business?**

Staff at Statcom Systems appreciate the investment that their company has made in ensuring they are properly trained and accredited to carry out their work and that work is done in a safe manner.

### **5. What do you think the impact of FPAS and recognised businesses will be for the fire protection industry in Australia?**

We believe that a general awareness will develop to the point where contractors who do not have FPAS will no longer be engaged for work. This will mean fire protection companies will be forced to have their staff properly trained and gain FPAS recognition.

Linkfire is a leading provider of essential safety measures (ESM) maintenance in Victoria, employing over 30 full-time staff. The business is responsible for maintaining more than 5,000 buildings of varying size and type throughout Victoria. Linkfire is a 'one stop shop' in ESM maintenance for owners and corporations, and facilities and commercial real estate managers.

Statcom Systems provides complete practical essential safety measure solutions. Statcom offers a professional and highly developed range of services and products to assist with the compliance of ESM, essential services and fire safety. Statcom Systems has offices in Melbourne, East Gippsland and Sydney. In other states, Statcom Systems is supported by building surveyors and leading fire services companies.

FPA Australia proudly congratulates Linkfire and Statcom Systems on taking up FPAS Business Recognition and setting their businesses apart as industry leaders. ■

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PHOTO: BUSHFIRE AND NATURAL HAZARDS CRC

# NEW RESEARCH CHALLENGE FOR AUSTRALASIA

The new \$130 million Bushfire and Natural Hazards CRC draws together all of Australia's fire and emergency service authorities with the nation's leading experts across a range of scientific fields to explore the causes, consequences and mitigation of natural disasters.

**By David Bruce**  
Communications  
Manager,  
Bushfire and  
Natural Hazards  
Cooperative  
Research Centre

The Bushfire and Natural Hazards Cooperative Research Centre (CRC) began last July, as the Bushfire CRC draws to a close at the end of June this year after a decade of bushfire-focused research.

Comprising 35 main projects, the creation of the Bushfire and Natural Hazards CRC delivers on a key recommendation of the 2009 Victorian Bushfires Royal Commission that the Commonwealth establish a national research centre for bushfire. The CRC is based in Melbourne but partners and researchers are in every Australian state and territory and New Zealand in a coordinated research program.

Research partners include leading universities, the Bureau of Meteorology and Geoscience Australia. Industry partners include the Australasian Fire and Emergency Services Authorities Council (AFAC), the Fire Protection Association Australia and the Red Cross.

The Chairman of the Bushfire and Natural Hazards CRC, Dr Laurie Hammond, said the CRC is building on 10 years of high-quality scientific research at the Bushfire CRC and is expanding the research effort into other natural hazards including flood, earthquake, cyclone and tsunami.

"This investment in research is linked to

the National Strategy for Disaster Resilience and will improve approaches to mitigation, operational responses and community resilience to natural hazards," said Dr Hammond.

The CEO of the Bushfire and Natural Hazards CRC, Dr Richard Thornton, said the CRC was largely end user driven. "The emergency service agencies, departments and non-government organisations around the country that become partners have a significant say in the development of the research program," said Dr Thornton.

"Importantly, most of the new research will not be hazard specific but cross-disciplinary, drawing on the expertise of scientists across a range of fields on issues common to all hazards."

Three broad themes span the priorities for those working in multi-hazard environments:

1. **Economics, policy and decision-making**—allocating resources for the greatest benefit
2. **Resilient people, infrastructure and institutions**—identifying vulnerability, managing the risk and increasing resilience
3. **Bushfire and natural hazard risks**—improving communications, warnings and predictions through more accurate forecasting and modelling.

## Research program highlights

### *Improving predictions for severe weather*

This project will use high-resolution modelling to better understand and predict important meteorological natural hazards including fire weather, tropical cyclones, severe thunderstorms and east-coast lows.

### *Getting a better sense of when disasters will occur*

Innovations in the field of remote-sensing technology are developing better forecasts of hazard events, better analysis of the preconditions to a hazard, and a more detailed and complex analysis of the impacts of real natural hazard events.

### *Modelling fire-spread*

Researchers will develop the science to guide emergency and disaster management organisations to predict the rate of spread and intensity of bushfires across a range of fuel types.

### *Burning for water and carbon*

Fuel reduction burning in eucalypt forests has traditionally focused on impacts to the trees. What has been lacking is knowledge of the effects of broader fuel reduction burning on fuel loads, and on carbon and water storages.

### *Engaging and retaining our volunteers*

Spontaneous volunteering by largely untrained and unaffiliated community members has become a significant issue for governments and the emergency service agencies. Can non-traditional forms of volunteering be called on for surge capacity as natural hazards events become more frequent? Elsewhere, volunteers are the backbone of the emergency services sector but agencies are grappling with how to avoid the high attrition rates that increase costs and reduce their organisations' effectiveness by relying on a small overworked core of volunteers. How can organisations change to reverse this trend?

### *Planning to make the right responses when disaster hits*

Communication of risk and warnings are central to our natural disaster response. This project will develop ways for better planning and preparations that will lead to safer responses during disasters and will allow for better recovery after the event.

### *Understanding the tsunami risk*

Tsunamis are less common in Australia, which presents a problem for emergency agencies educating or warning the public of a risk that has a low likelihood of occurring but a high impact if it did. This project will devise ways to better engage the Australian public on tsunami risk.

### *Working with fire in Top End communities*

Researchers will work with local communities in northern Australia to build on the existing knowledge of bushfires and other natural hazards to better deal with risks across the region.

### *Building better infrastructure*

Inappropriate or outdated buildings in regions prone to bushfires, earthquakes, cyclones or floods can exacerbate the impacts of natural disasters. Researchers will examine what good building looks like and how it can be achieved across communities.

### *Understanding the politics of natural hazards*

Policy decisions made by all levels of government on emergency management may help or hinder the ability of communities to prepare for or respond to natural hazard events. How can the responsibility for community safety be a shared responsibility? How can the impacts of natural hazards be reviewed to help communities prepare for future events and not just focus on past ones?

### *Counting the costs*

What are the financial implications and benefits across a range of options in natural hazard management? How do we calculate the full costs of damage from natural hazard events across all sectors of industry and agriculture?

### *Searching our past to see our future on fatalities and building loss*

Searching databases back to European settlement in Australia, researchers will analyse the trends in building damage, fatalities and injuries caused by natural disasters. These trends will be projected into the future in the context of emerging issues such as an ageing and shifting population, and a changing climate.

### *Preparing for the worst—always including children*

Researchers will conduct a comprehensive review of disaster management plans across Australia to ensure they are child-centred.

### *Managing animals in disasters*

Domestic pets, commercial animals, livestock and wildlife—communities under threat place a high value on providing protection for their animals, often at great risk to themselves. Researchers will develop guidelines and training for policy developers and emergency service responders to ensure animals are integrated in public safety education and messaging. ▀

Keep in touch: for more details visit [www.bnhcrc.com.au](http://www.bnhcrc.com.au), and keep up-to-date by liking the Bushfire and Natural Hazards CRC on Facebook, and following us on Twitter.

Opposite: The launch of the Bushfire and Natural Hazards CRC with CRC Chairman Dr Laurie Hammond, ACT State Emergency Service Chief Officer Tony Graham, Federal Minister for Justice the Hon Michael Keenan, NSW RFS Commissioner Shane Fitzsimmons, ACT RFS Operations Manager Richard Woods, AFAC CEO Stuart Ellis and CRC CEO Dr Richard Thornton.

The research focus has been expanded to cover not just bushfire, but earthquake, flood, cyclones, storms and other natural hazards.

JOHN MCCOMBE, NEW ZEALAND FIRE SERVICE



# RIGHTING A WRONG— LESSONS FROM AN OVERSEAS PIPELINE EXPLOSION

## GAS PIPELINE EXPLOSION AT GHISLENGHIEN, BELGIUM, JULY 2004

By **Erin Liston-Abel**

Director Operations Support, AFAC and **Stuart Harvey** Manager, Hazardous Material Technical Group, AFAC

The AFAC 2014 Knowledge Event Series was successfully rolled out across Australia in April 2014. AFAC, with the support of Motorola Solutions, was pleased to host Kaptein Commandment Jan Jorissen of the Lommel Fire Brigade, Belgium, to present on the lessons learned from a gas pipeline explosion that occurred in Ghislenghien, Belgium on 30 July 2004.

The series kicked off on 8 April in Perth, taking in six locations before finishing in Darwin on 29 April. Kaptein Jorissen presented in all major cities, with New South Wales hosting on behalf of the Australian Capital Territory. Over 450 delegates from fire services, government agencies and industry attended the series.

Australia, as a major producer of natural gas with several high-pressure gas pipelines, faces similar risks to Belgium in this respect and so has much to learn from this disaster. The presentation provided delegates with good tactical detail as well as broader mitigation measures. Through the sharing of current practices, from national and international perspectives, attendees gained sound guidance for effective response to, and command and control of, incidents relevant to natural gas. Attendees also discussed Australian practices that may need review based on lessons learned from Belgium.

Due to ongoing legal proceedings in Belgium, many of the operational lessons had not been well circulated, again highlighting the relevance of the series. A 30-minute film of highlights and a 10-minute interview with Kaptein Jorissen will be made available on the AFAC website for members.

### The Ghislenghien disaster

On 30 July 2004, a high-pressure natural gas pipeline exploded in Ghislenghien, Belgium. The incident claimed the lives of 24 people, including four firefighters and the Fire Chief of the local fire brigade, and injured 122 people.

The Ghislenghien disaster was the first of its kind. Approximately one hour before the explosion, construction workers contacted a gas distribution company (not the operator of the involved pipeline) to report a suspicious smell coming from the sewer. Emergency calls were made to 112 (000 in Australia) 14 minutes later, and the fire service notified soon after. The fire service was on-site investigating when the explosion occurred.

The accident has since been described as the worst catastrophe for the country. The explosion resulted in large pillars of flame and crushed buildings in the industrial area. Burnt-out vehicles and other debris were thrown more than 100 m. The disaster disrupted gas to Belgium and France, with the material damage estimated at over \$160 million. The economic loss has not been valued in dollar terms, but has been classified as immense.

The pipeline that ruptured was a high-pressure, 1000-mm diameter pipeline transporting unodourised natural gas. The pipeline, now back in operation, has a wall thickness of 14 mm and transports gas at 20–10 m/s at 80 bar operating pressure. The remote isolation valves for the pipeline were located 36 km apart, and were shut down by the operator on identifying a severe pressure loss. The subsequent fire burnt for three hours until the 650 t of gas within the isolated pipeline was consumed. The torches burning from the broken pipe burnt at an average height of 200–250 m, and in the initial stages of the fire, they reached 450 m.

Evidence has suggested that the pipeline collapsed, releasing a massive vapour cloud prior to ignition. The key question for investigators was understanding the cause of the pipe failure leading to the disaster. It was learned that in the weeks leading up to the disaster, the pipeline was operating at a reduced pressure

### KNOWLEDGE EVENT SERIES

AFAC thanks Motorola Solutions for partnering with AFAC to bring knowledge to the emergency services for the fifth year running. These events broaden our discipline, which is invaluable to future incidents. AFAC acknowledges the generous support of Motorola Solutions to our industry.

Throughout the series, Motorola Solutions also hosted a number of informal dinners across Australia to provide a unique opportunity for select agency personnel to meet Kaptein Commandment Jan Jorissen of the Lommel Fire Brigade, Belgium. This also gave Jan an invaluable insight into the Australian emergency services sector.

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(~30 bar) because of maintenance on the pipeline some 50 km away. In the 48 hours preceding the incident operators were in the process of increasing the pressure back to 80 bar. While legal proceedings continue, a likely hypothesis is that the pipeline was damaged during construction works some three weeks prior to the incident. At the lower pressure, the integrity of the pipeline was maintained. It was not until the pressure increased that its integrity failed.

While numerous lessons are to be learned from the cause of the disaster, many lessons can also be learned from the response. At the time, no standard operational guidelines were available for first responders. Subsequently, much research has now been undertaken to develop operational guidelines. This research included examining the effects of heat and radiation, the immense noise from a high-pressure pipeline, blast pressures, toxic effects and fragmentation. Effects of ground surface roughness and wind on dispersion models, and heat contouring were also explored.

The final product of this research culminated in the issue of Action Cards for firefighters. The cards consider pipeline size, pressure, product and ignition. They also highlight a three-zone safety system of unsafe and safe areas (including no fly zones), alarms and actions. Further, the safety zones take into account the radiant heat potential and the house burning distance. The alarms deal with notifications, response escalation and no fly zones. Finally, the actions deal with safety zones and evacuations both for ignited and unignited releases.

## Lesson learned

### *Fire protection in Belgium*

Belgium is a country of three languages, 10 provinces and 589 communities. Each community has its own governance and fire service. Before the gas pipeline disaster, minimal interaction on disaster preparedness and response existed among the communities.

The Lommel Fire Service currently has two fire stations, 27 full-time firefighters, 67 volunteers and five administrative support staff. A significant challenge is present when local governance arrangements, coupled with small community brigades, endeavour not only to prepare for, but deal with, significant incidents. Disasters like the gas pipeline explosion do not discriminate between community and province borders. As such, it is essential for emergency responders to look beyond what has traditionally been done to what needs to be done in the future to increase preparedness.

### *Impact of disasters on organisations*

A disaster should lead to a critical review of fire service preparedness, prevention, response and recovery of the incident, as well as the contributing factors in the lead up to, and the aftermath of, the disaster. Identification of potential risks in and to the community is critical. Once these are clearly identified, work can begin on addressing the risks. Operational procedures, guidelines and adequacy of equipment should be continually re-assessed.



Kaptein Commandment Jan Jorissen of the Lommel Fire Brigade and presenter of the 2014 Knowledge Event Series.

In Belgium a new law was introduced in 2007 for the reorganisation of fire departments into 34 zones and 256 fire brigades. The philosophy of the new legislation is to ensure adequate and appropriate response, with a focus on response time regardless of location.

### *Impact of legislation on responding to disasters*

The differences between Belgium's federal and community legislation led to uncertainty around pipeline safety requirements. The resulting disaster highlights the importance of fire services personnel making themselves familiar with legislative variances in order to assist in the identification of potential disasters. Then, the fire service can lobby for legislative improvement and help ensure appropriate equipment and procedures are in place to respond to and deal with the disasters.

### *Operational guidelines and introduction of Action Cards*

Pipeline incidents of this size seldom occur, but when they do the impact is often catastrophic. It is essential to establish effective guidelines and procedures, coupled with appropriate training, to ensure firefighter safety. Operational guidelines need to include information on pipeline product type, pressure and flow (to indicate potential release), and actions for ignited release and release where the ignition source is yet to be identified. These guidelines should include exclusion zones and evacuation zones based on the release type.

## AFAC 2014 Knowledge Event Series

Knowledge events are embedded as part of AFAC's core business and provide a valuable professional development opportunity to both our member agencies and industry partners. Motorola Solutions has partnered with AFAC for the past five years and this ongoing support has enabled AFAC to bring a number of key international speakers to Australia, at no cost to members. The annual delivery of the Knowledge Event Series has provided fire and emergency service members with current and practical information on a range of topics including urban high-rise firefighting, incident management and dealing with inquiries. Strong member participation at these events and the excellent feedback received indicate that they are important for increasing our members' capacity. ■

For more information about the event series please contact Erin Liston-Abel via email at [erin.liston-abel@afac.com.au](mailto:erin.liston-abel@afac.com.au)

# INTRODUCING FPA AUSTRALIA STATE & TERRITORY MEMBERSHIP GROUPS



**By Joseph Keller**

FPA Australia Communications Manager

Recently FPA Australia introduced a new structure for membership engagement called State & Territory Membership Groups (STMGs). These groups, which have replaced the State Divisional Committees, bring many new changes and this article explains these in detail as well as outlining how members can get involved in these important groups.

## What are State & Territory Membership Groups?

State & Territory Membership Groups are an ideal opportunity for FPA Australia members to engage with the Association in a contemporary, transparent way in order to bring about positive change in the fire protection industry.

The groups meet periodically in Australian states and territories and follow a uniform structure ensuring all relevant areas are covered.

This structure is made up of six portfolios:

1. Regulatory stakeholders
2. Regulation, codes and standards
3. Accreditation and licensing
4. Products and services
5. Members and membership activities
6. Bushfire.

## Why does state and territory engagement matter?

In Australia, each state and territory is responsible for much of its own regulation of fire protection work. This means that industry requirements can vary significantly around the country and this diversity requires local knowledge in order to properly identify and address specific local situations as they arise. Additionally, as new regulation and standards, preferred best-practice alternatives and updated technologies are introduced into local markets, this information is fed back from each STMG into the Association, helping to guide its strategic direction and positively influence the industry. STMGs also have the flexibility to hold meetings in regional centres from time to time, to



ensure members in those areas also benefit from their local membership group.

## How do membership groups work?

Nominations for portfolio leader positions are open to all eligible members in each state or territory. Portfolio leaders are elected every two years by the members and once all portfolio leaders have been elected, they in turn select a chair and deputy chair for each group.

## Why should I get involved?

STMG meetings are:

- free to attend and are held in an informal atmosphere in professionally-equipped venues
- a perfect opportunity for you to network with industry colleagues, share knowledge and socialise with like-minded professionals
- an opportunity to contribute to discussions and agenda items that feed into the Association's overall strategic direction
- an ideal opportunity for you to educate your staff on changes occurring in the fire protection industry at no cost to your business
- highly flexible, allowing you to freely

attend in any state or territory you choose

- an opportunity to gain information to help you better understand changes occurring across the fire protection industry.

## What if I can't attend in person?

All FPA Australia members are given full access to summary notes from each STMG meeting around the country, meaning you can stay connected even if you can't attend. Members are also encouraged to contribute ideas for discussion in advance, even if they are unable to attend on the day.

## How can I get involved?

All FPA Australia members can attend all State & Territory Membership Group meetings. Simply note when the next meeting is being held in the relevant area, register your interest and arrive ready to contribute positively to the discussion. ■

Interested members who cannot attend are encouraged to access the notes from each meeting through the secure member resource portal CONNECT at <https://connect.fpaa.com.au>. You can learn more about the STMGs at [www.fpaa.com.au/engagement/stmg](http://www.fpaa.com.au/engagement/stmg).



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PHOTO: BUSHFIRE CRC

Research sought to evaluate the significance of smoke risks from bushfires and how they compare to those from prescribed fires.

# LEARNINGS FROM THE BUSHFIRE CRC

The change in the way that bushfires are managed has been strengthened by the extensive and concerted efforts of the Bushfire CRC.

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

The bushfires of the scale experienced on Black Saturday in 2009 raised many research questions for fire and land management agencies right across Australia and New Zealand. It was on this foundation that the second phase of Bushfire Cooperative Research Centre (CRC) research was built. As the Bushfire CRC finishes at the end of June this year, the major findings are being drawn together.

This article is part one of a snapshot of selected research projects and their findings, with part two to follow in *Fire Australia* Spring 2014. In-depth reports, along with four-page *Fire Notes* (research summaries in plain language) are available at [www.bushfirecrc.com/drivechange](http://www.bushfirecrc.com/drivechange).

## Next generation fire prediction

This multipart research project, led by Mr Bob Cechet (Geoscience Australia) and involving Mr Ian French (Geoscience Australia), Dr Kevin Tolhurst (University of Melbourne), Dr Jeff Keperth (Bureau of Meteorology) and Dr Mick Meyer (CSIRO), has produced the Fire Impact and Risk Evaluation Decision Support Tool (FireDST). FireDST is a proof-of-concept simulation system that aims to provide critical fire planning information to emergency

services, government and the public. It is advanced software that can be used to understand the potential impacts that a bushfire may have on community assets, infrastructure and people. FireDST demonstrates the proof of concept to predict the probabilities of neighbourhood and house loss, and the potential health impacts of bushfire smoke and the areas that are likely to be affected by a bushfire. This study was profiled in *Fire Australia* Summer 2011–12 (p. 14).

## Measuring health impact of bushfire smoke

As part of the FireDST work, CSIRO's Dr Mick Meyer sought to evaluate the significance of smoke risks from bushfires and how the risks compare to those from prescribed fires. The study demonstrated that the impact on regional populations from particulate matter (PM) in the smoke could be severe; in the extreme it could be a much greater public health hazard than the direct risks at the fire front. Bushfire PM emissions can be enormous and fire is often the dominant source of particulate pollution, occasionally outstripping industrial sources by orders of magnitude. However, the key issue is not the total emission of PM, but the extent to which it mixes back into the atmosphere's surface layer and the



length of time that PM concentrations remain high around population centres. These are determined by fire duration and the patterns of smoke dispersion.

### Understanding how extreme fires develop

The Fire Development, Transitions and Suppressions project, by Dr Andrew Sullivan, Dr Peter Ellis, Mr Jim Gould and Dr Matt Plucinski at CSIRO, was the first comprehensive investigation of the factors influencing the life cycle of a bushfire, from its inception through its development and growth to the point where it begins to throw firebrands and start spotfires, starting the cycle again. This study was profiled in *Fire Australia* Spring 2012 (p. 38).

### Complex fire weather

The Modelling Investigation of Lofting Phenomena and Wind Variability project investigated the science behind extreme fire weather and how these conditions contribute to dangerous spotting. Dr Jeff Kepert, Dr Will Thurston, Dr Robert Fawcett and Dr Kevin Tory at the Bureau of Meteorology developed a better understanding of the physical mechanisms that lead to bushfire spotting through interactions between a smoke plume and the atmosphere. As this understanding further develops, the ability to better predict spotting will increase. This study was profiled in *Fire Australia* Autumn 2013 (p. 32).

### Making strategic choices

The Integrated Assessment of Prescribed Burning project used case studies in New Zealand's Central Otago region and South Australia's Mount Lofty Ranges to provide insights into which fire-prevention strategies provide the best value for money. A decision framework was developed to provide an integrated assessment of the benefits and costs of fire risk management strategies. The study, undertaken by Professor David Pannell and Research Assistant Professor Fiona Gibson at the University of Western Australia, highlighted the fire risk management

strategies (including prescribed burning) that are likely to produce the highest benefit per dollar spent. The research shows that the methodology works and can provide valuable decision-making inputs to fire management programs. This work is profiled in this issue of *Fire Australia*—see page 40.

### Economics and future fire scenarios

This study, by Dr Geoff Cary, Dr Helena Clayton, Dr Malcom Gill and Professor Steven Dovers at the Australian National University, provided new insights into future bushfire scenarios for Australia. The research demonstrates that fire activity is likely to increase in wetter environments, but decrease in drier environments. Economic evaluation is a potentially useful tool in exploring management adaptation to these changes, but it is currently under-used within agencies. Key actions identified as necessary for increasing the use of economic evaluation methods include: (i) increasing the economic expertise among bushfire management and policy professionals; and (ii) designing economic evaluation that connects to the broader social and political context of bushfire management decision-making. This study was profiled in the Spring 2013 issue of *Fire Australia* (p. 38).

Using economic evaluation, researchers investigated which fire risk management strategies, such as prescribed burning, provided the best value for money.

How bushfires develop and grow was studied safely using the CSIRO Pyrotron.



PHOTO: ANTHONY CLARK, NSW RFS



Research findings will enable agencies to continue to refine performance at levels above the Incident Management Team.

PHOTO: WAYNE RIGG, CFA



Bushfire CRC research has improved the understanding of how smoke plumes interact with the atmosphere to transport embers.

### Incident management above the IMT

The Effective Incident Management Organising study has improved the understanding of how multi-agency emergency management coordination at regional and state levels (and at a national level in New Zealand) could be improved in order to reduce the consequences to communities of an emergency. Dr Christine Owen, Dr Roshan Bhandari, Dr Ben Brooks (University of Tasmania) and Dr Chris Bearman (CQUniversity) investigated information flow, communication, capacity to adjust to emerging scenarios, breakdown in coordination, training and education, and how changes to these elements will support more effective incident management. These findings will enable agencies to continue to refine their performance at these levels.

### Smoke impacts on firefighters at the rural-urban interface

The Operational Readiness of Rural Firefighters (Air Toxins) project, undertaken by Dr Fabienne Riesen and Dr Michael Borgas at CSIRO, identified, measured and modelled toxic emissions that firefighters could be exposed to while fighting fires at the rural-urban

interface. The findings will enable agencies to deploy firefighters more safely and provide advice to the community. This research was profiled in the Autumn 2014 issue of *Fire Australia* (p. 18).

### Living on the edge

Many rural-urban landscapes, while a fire risk, are beautiful. In many cases this beauty is the reason why people choose to live in these areas, despite the risk. This pilot research project applied the process of 'place mapping', a new approach for fire and land management agencies, to gain a better understanding of how communities in rural-urban areas perceive fire risk in the context of their natural landscape.

The University of Melbourne's Associate Professor Ruth Beilin and Dr Karen Reid found that the place mapping process can provide community members with a mechanism through which to communicate their perspectives on bushfire risk. This research was profiled in the Winter 2013 issue of *Fire Australia* (p. 32).

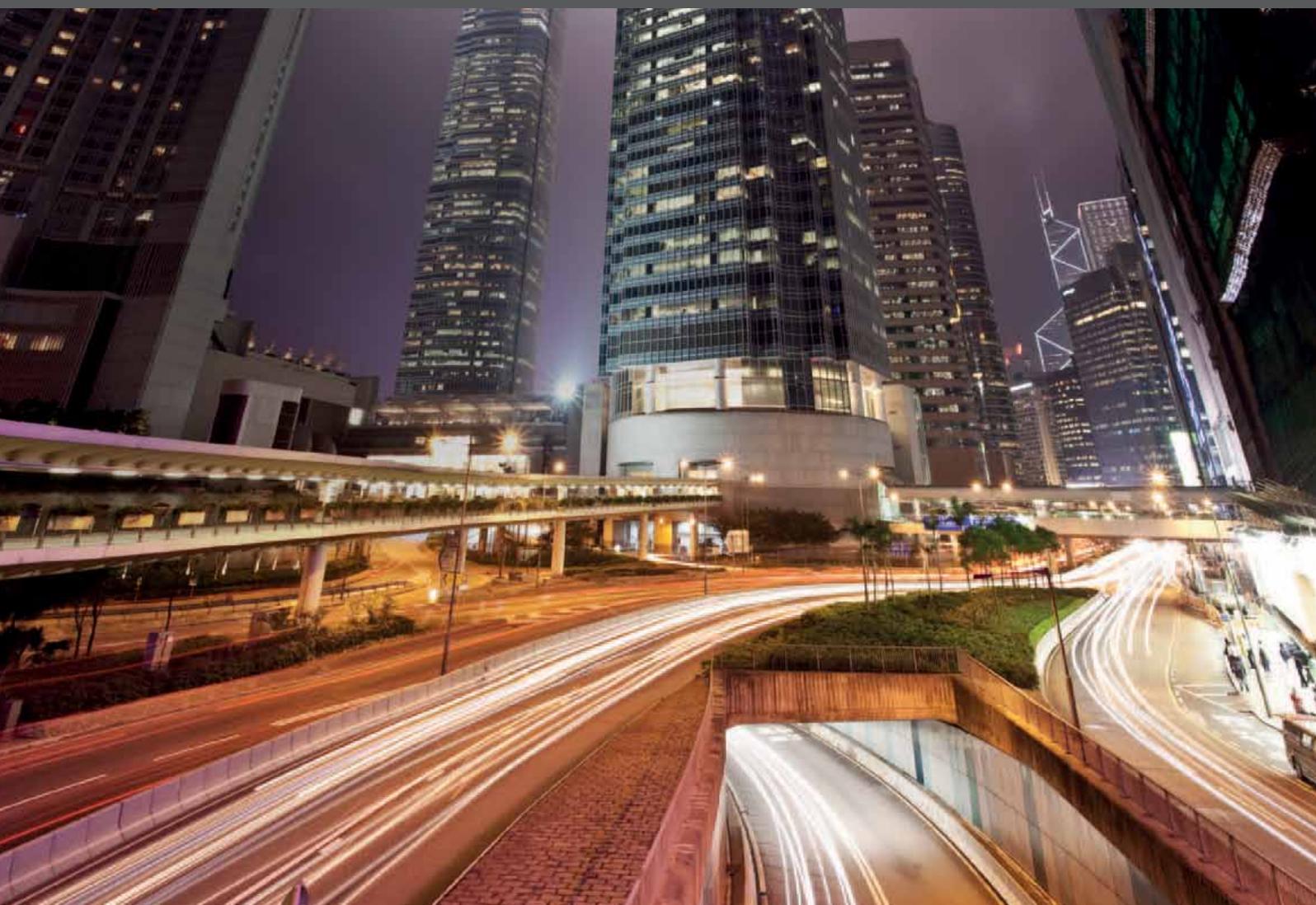
### Mapping fire severity in the tropical North

The Northern Fire Mapping project, a collaboration between Dr Jeremy Russell-Smith and Dr Andrew Edwards at Charles Darwin University, and Dr Mick Meyer from CSIRO, developed fire severity mapping to help manage fire in the tropical savannahs and rangelands across Queensland, the Northern Territory and Western Australia. The study has determined that on average over half the landscape is affected by fire each year, releasing vast amounts of carbon and destroying the carbon stored in trees. Reducing these greenhouse gas emissions will have enormous financial benefits for fire managers, as well as Indigenous land owners, allowing them to earn incomes from managing the land. The results of the project have improved ecological risk assessments, including greenhouse gas emissions, tree carbon sequestration, biodiversity and erosion. ■



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# THE DRY CHEMICALS STORY—PART 1

Dry chemicals have a several-hundred-year history as fire-extinguishing agents. The first part of this series describes how the chemicals used have changed, and that dry chemicals and dry powder extinguishers are still relevant today.

By Barry Lee,  
OAM



A demonstration of a dry chemical extinguisher in 1933.

The use of dry chemicals as a fire extinguishant appears to have originated in Germany, probably around the 1750s. Sodium bicarbonate eventually became the agent of choice. In 1912, a patent was awarded to Internationale Feuerloschen GmbH, and Total in Germany introduced an effective sodium bicarbonate-based agent incorporating borax as a combustion retardant and magnesium stearate for water repellence.

Development proceeded slowly until the late 1930s, when the Dugas Engineering Company (acquired by the Ansul Company in 1939) introduced to the USA effective cartridge-operated portable extinguishers, wheeled extinguishers and a limited range of fixed-piped systems. Lodus J Dugas said that the turning point in the development of a successful dry chemical fire extinguisher came when he was able to display and demonstrate it at the 1933 World Fair in Chicago. The first breakthrough sales of his Dugas units were to the Sherwin Williams Paint Company and the Chicago Motor Coach Bus Lines. Worldwide development continued to the point that, today, dry chemicals are the most effective extinguishing agents available for use on Class B fires.

## Dry chemical or dry powder?

For the purpose of this article, National Fire Protection Association (NFPA) definitions are used:

**Dry chemical**—A powder composed of very

small particles, usually sodium bicarbonate, potassium bicarbonate, or ammonium phosphate-based, with added particulate material supplemented by special treatment to provide resistance to packing, resistance to water absorption (caking), and the proper flow capabilities.

**Dry powder**—‘Solid materials in powder or granular form designed to extinguish Class D combustible metal fires by crusting, smothering or heat transferring means.’

## Dry chemicals

Some of the dry chemicals in current use are described here.

### *Sodium bicarbonate-based*

Sodium carbonate,  $\text{NaHCO}_3$ , is the most commonly used dry chemical extinguishant. Sometimes referred to as ‘standard dry chemical’, it is an alkaline agent suitable for use on flammable liquid fires and fires involving energised electrical equipment. Originally, moisture repellence was accomplished using water-insoluble stearates. Today, silicones are principally used for this purpose. Particles are milled to an average size of about 25–30  $\mu\text{m}$ .

### *Potassium bicarbonate-based*

Potassium bicarbonate,  $\text{KHCO}_3$ , is claimed to be twice as efficient weight-for-weight as sodium

bicarbonate. It is an alkaline agent suitable for use on flammable liquid fires and fires involving energised electrical equipment. Certainly, it can be said that on open-type spill fires, a given area square fire can be extinguished with 50% less agent than sodium bicarbonate-based dry chemical, all variables being equal. Similarly, in the case of a deep-layer pool fire, about 75% as much agent would be needed compared with sodium bicarbonate-based agent.

The US Naval Research Laboratory pointed out that the superiority of potassium bicarbonate-based dry chemical is only measurable where criticality of application exists. At very high rates of application (where wastage can occur) little performance difference can be seen. Where agent quantity is limited, the potassium bicarbonate-based agent is clearly superior, making it the agent of choice for small extinguishers where high efficiency on a weight basis is most important.

#### **Ammonium phosphate-based**

A German development, ammonium phosphate-based dry chemical,  $(\text{NH}_4)_2\text{H}_2\text{PO}_4$ , is an acidic agent suitable for use on fires in carbonaceous materials as well as flammable liquid fires and fires involving energised electrical equipment. It is often referred to as 'multipurpose', 'ABC' or 'tri-class' dry chemical. The mechanism of extinguishment on surface-burning Class A fires is to form a crustaceous coating (by melting at 182–205 °C) permeated throughout with ammonia gas. Flexible while hot, this coating becomes brittle on extinguishment. Left undisturbed, it acts as a flame retardant to prevent re-ignition.

#### **Carbamic dry chemical**

Originally developed in the late 1960s by Imperial Chemical Industries Limited, Mond Division, and trade-named 'Monnex', carbamic dry chemical (potassium carbamate-based) is produced by chemical reaction of urea and potassium bicarbonate. The manufacturers claim a relative firefighting efficiency (based on critical application rates) of 2.4 : 1 compared to potassium bicarbonate-based dry chemical. The effectiveness of carbamic dry chemical is attributed to its rapid decomposition (decrepitation) when heated by flame to yield thousands of particles, many of which are  $<0.01 \mu\text{m}$  in size. This implies a greatly increased surface area for flame inhibition.

### **Dry powder extinguishing agents**

Some of the dry powder extinguishing agents in current use are described here.

#### **Granular graphite**

Granular graphite with added phosphorus-containing compounds to improve fire-extinguishing effectiveness has long been used on combustible metal fires. It cannot be discharged from fire extinguishers and is applied by shovel or hand scoop. The heat of the fire causes the phosphorus to generate vapour, which blankets the fire and prevents air from reaching the burning metal. The graphite, a good conductor of heat, acts to cool the metal below its ignition point.

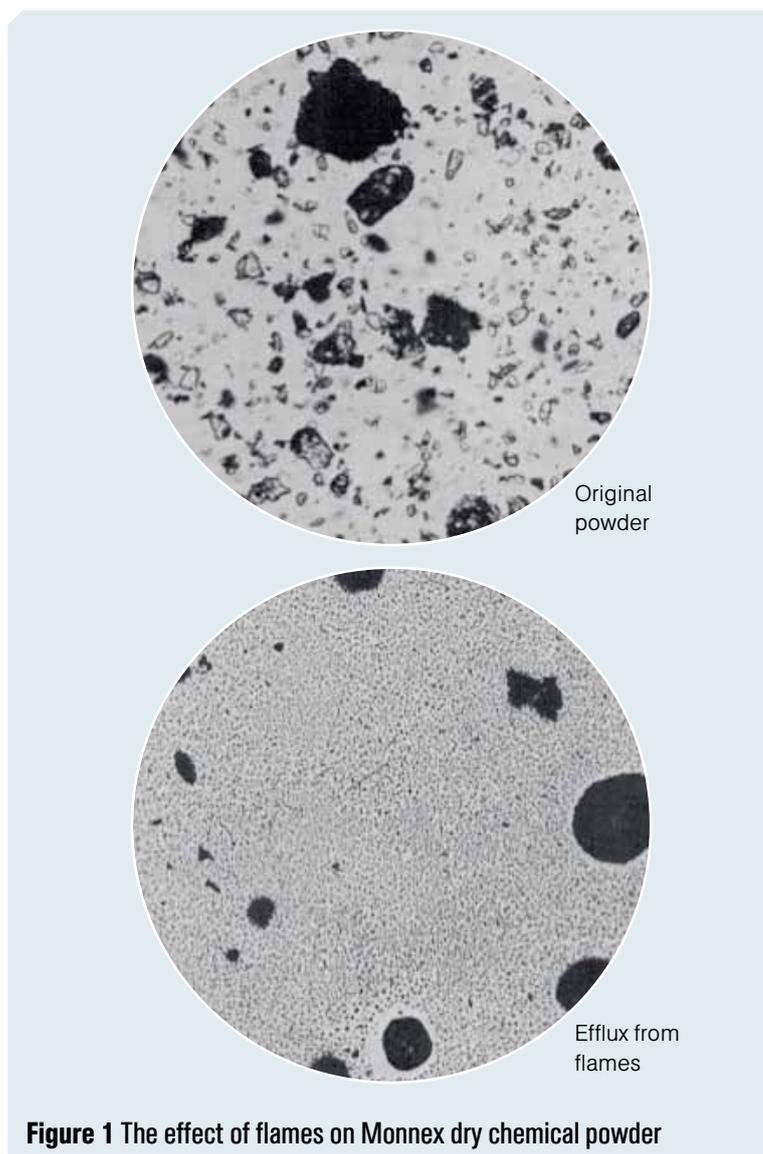
Two such preparations are trade-named 'G-1' and 'LITH-X'. LITH-X was developed for use on lithium fires, and can be discharged from special low-velocity, soft-stream extinguishers. It will contain (and in some cases completely extinguish) fires in zirconium, titanium and sodium-potassium alloy.

#### **Sodium chloride (salt)-based dry powder**

This preparation has a salt base, a polymer for sealing and other additives to render it free flowing and to cause heat crusting. It is suitable for use on sodium, potassium, sodium-potassium alloy and magnesium fires. It is also claimed to control and sometimes extinguish small fires on zirconium and titanium. It may be used in fire extinguishers. 'MET-L-X' is one trade name.

#### **Sodium carbonate-based dry powder**

Trade-named 'NA-X', this preparation is a low-chloride sodium carbonate-based agent containing a polymer crusting component, together with additives to render it free flowing. The low chloride content



**Figure 1** The effect of flames on Monnex dry chemical powder



Above: A late twentieth century 12,000 kg dry chemical truck.



Applying dry chemical extinguishants in an emergency situation.

is designed to prevent corrosion of stainless steel piping in specific hazards. It may be used on sodium, potassium and sodium-potassium alloy fires.

**Eutectic mixtures of chlorides and/or fluorides**

Several eutectic chloride mixtures have been developed for use on burning metal fires. Typically sodium chloride, potassium chloride, barium chloride and lithium chloride are used. Another mixture incorporates the fluorides of the alkali metals and anhydrous borax. Some of these salts are toxic—barium chloride, sodium fluoride and potassium fluoride.

**Mechanism of extinguishment**

In the early 1900s, it was believed that dry chemical extinguished fire by the smothering action of carbon dioxide produced by decomposition of the chemical in fires. By the 1950s this view was modified: the Fire Protection Association, UK, suggested that, “Extinguishment of fires by dry powder (sic) is believed to be achieved mainly by blanketing, i.e., by the exclusion of air, although a small amount of carbon dioxide may be evolved which makes a limited contribution to the extinguishment of fire. The cooling properties of the powder are negligible ...”

It was some years before it was realised that the effect of dry chemical was far more powerful than could be accounted for by the amount of carbon dioxide produced. The effect is today referred to as ‘anti-catalytic’, a process in which the powdered chemical absorbs free radicals and thus interrupts

the chain reaction of combustion. Available surface area is an important factor in this process and is immense. For example, a typical 14 kg dry chemical extinguisher charge represents an aggregate surface area in excess of 4,300 m<sup>2</sup>, or nearly half a hectare. Production of carbon dioxide is incidental; indeed, many effective dry chemicals do not produce any.

Friedman and Levy<sup>1</sup> found in the case of potassium bicarbonate, for example, that the most likely reactions that account for its extinguishing effectiveness rely on its ability to break down under heat to give potassium hydroxide vapour. This reacts quickly with the OH (hydroxyl) radical in the branched combustion chain and the atomic hydrogen such as found in the chain reaction:

1.  $2\text{KHCO}_3 + \text{heat} = \text{H}_2\text{O} + \text{CO}_2 + \text{K}_2\text{O}$
2. Then:  $\text{K}_2\text{O} + \text{H}_2\text{O} (\text{from combustion}) = 2\text{KOH}$
3. The flame-quenching reactions are:  
 $\text{KOH} + \text{OH} (\text{free radical from the branched chain}) = \text{KO} + \text{H}_2\text{O}$
4. and:  
 $\text{KOH} + \text{Active H} (\text{from the branched chain}) = \text{K} + \text{H}_2\text{O}$

This reaction illustrates that the extremely fast breakdown and vaporisation of potassium bicarbonate in the heat of the fire reacts to halt (or quench) the free radical OH groups and the active hydrogen atoms, both of which are produced in the process of burning hydrogen-containing compounds.

The reactions of KOH vapour are exothermic and take place quickly and easily at 1,200 °C (and above) within flames. Put another way, the free radicals in the flame reaction are self-propagating unless captured by condensation on or interaction with some inhibiting substance. This is now believed to be the basis of dry chemical fire-extinguishing action. The fine particles introduced to the flame area are thought to capture enough of the free radicals to interrupt the chain reaction, and nearly instantaneous flame suppression results.

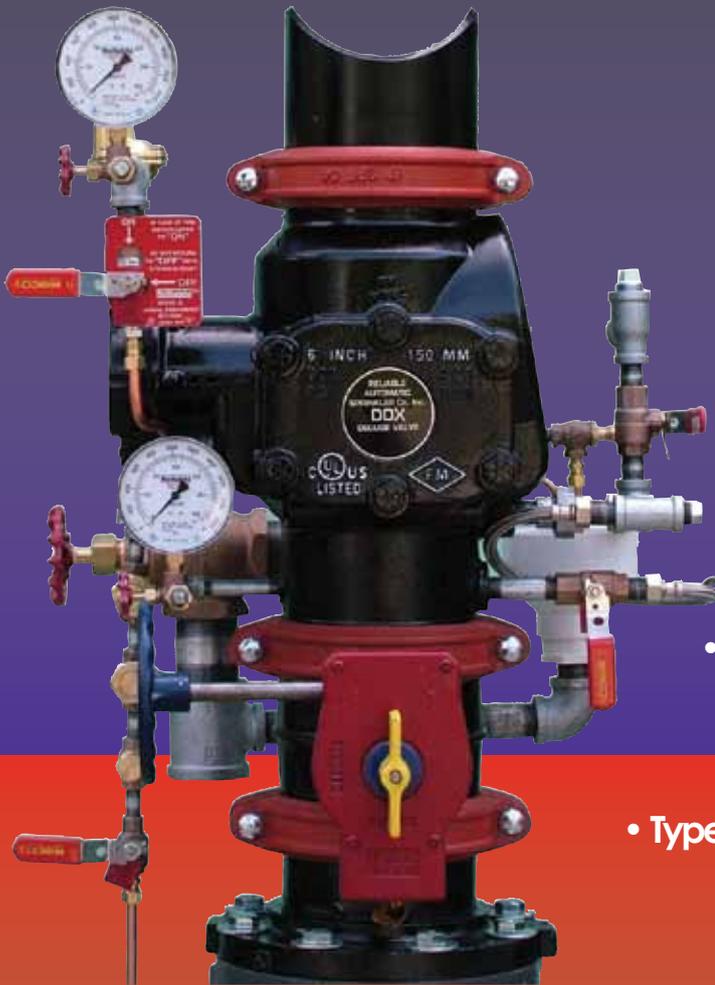
The mechanism of extinguishment of surface-burning Class A fires by ammonium phosphate-based dry chemical was discussed earlier in this article. It is believed that, in the case of Class B fires, the extinguishing mechanism involves the thermal decomposition of the phosphate (ammonium dihydrogen orthophosphate) into free ammonia and orthophosphoric acid, which, through successive dehydration phases, passes through the pyrophosphoric and metaphosphoric steps, ultimately dehydrating to phosphorus pentoxide in the gas phase. These reactions are all appreciably endothermic, exerting a strong cooling effect on the gas phase flames. The released ammonia is almost certainly instrumental in reducing the hydroxyl ion concentration. ■

**Reference**

1. Friedman R and Levy JB, 1963, Inhibition of opposed-jet methane-air diffusion flames: the effects of alkali metal vapour and organic halides, *Combustion and Flame* 7(2).

# Reliable's DDX Valve

## 1 Valve, 9 Systems!



- Wet Pilot Deluge
- Dry Pilot Deluge
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# WHAT FIRE RISK MANAGEMENT STRATEGIES PROVIDE THE BEST VALUE FOR MONEY?

PHOTO: BUSHFIRE CRC

The methodology used in Integrated Assessment of Prescribed Burning study can provide valuable decision-making inputs to fire management programs.

Fire managers have to face a multitude of competing priorities when considering how to reduce losses from future bushfires. With limited funds, an increasing population to protect from bushfire, and more people living in bushfire-prone areas, fire managers face a significant resource allocation challenge. Knowing which bushfire-risk mitigation strategies provide the best value for money is therefore potentially of great benefit.

**By Research Assistant Professor Fiona Gibson and Professor David Pannell**  
University of Western Australia and Bushfire CRC researchers

The Bushfire CRC study Integrated Assessment of Prescribed Burning used quantitative analysis that combined information about risk, management strategies, costs and values in a spatial context, together with high levels of stakeholder consultation. The results highlight the fire risk management strategies that are likely to produce the highest benefit per dollar spent.

## What did we do?

Two case studies were undertaken, the first in Central Otago, New Zealand and the second in the Mount Lofty Ranges, South Australia.

The Central Otago case study was supported by the New Zealand National Rural Fire Authority. Stakeholders from the Department of Conservation, fire authorities and farmers were brought together to establish a direction for improved fire risk management. The aim was to evaluate a range of fire-prevention strategies (including prescribed burning) in different parts of the region.

In the Mount Lofty Ranges, the focus of the analysis was on selecting the locations and areas of

prescribed burning that provided benefits greater than costs. The Department of Environment, Water and Natural Resources, Forestry South Australia and South Australia Water were all involved as government agencies with key land management responsibilities in the region.

In both studies, extensive consultation was undertaken with scientists, fire regulators, local experts and land managers.

## How does it work?

The study is adapted from experience with the Investment Framework for Environmental Resources (INFFER) model, to account for fire risk, fire-spread, the damage caused by fires of different severities, asset values, weather conditions, impacts of fire-prevention options and costs of those management options. The model estimates the benefits and costs of various fire risk management strategies that aim to protect life as well as various assets such as homes, plantations, biodiversity, industrial and commercial assets and infrastructure. The benefits are calculated as reduced damage to the assets and reduced suppression costs.

A baseline of expected losses due to fire is estimated for a baseline scenario. The levels of losses depend on all of the factors listed above. The calculations are repeated with a particular management strategy in place. The difference between the two results (with and without management) indicates expected net benefits of introducing the additional management regime relative to the baseline.

The benefits are measured as expected benefits, depending on the probabilities of different possible outcomes. This is important because the benefits and costs vary substantially from year to year, depending on factors such as the weather. Results should be viewed as providing an indication of average benefits per year over a long run of years. This information, combined with the cost of the management strategy, is used to calculate a benefit–cost ratio (BCR) for each strategy. Users can simulate many different strategies for bushfire risk management and observe the estimated BCRs for each strategy.

### What did we find?

For the Central Otago case study, the prescribed burning strategies favoured by some stakeholders were shown by the model to be a poor investment. Instead, strategies that reduced the number of fires starting within the town itself were the best value.

In the Mount Lofty Ranges case study, the findings complemented those by Gibbons et al<sup>1</sup> and Penman et al<sup>4</sup> in that reducing vegetation cover close to high-value assets reduced fire risk more than doing so further away from assets.

Findings drawn across both case studies are highlighted below. Full research findings and more details are available in Gibson and Pannell<sup>2</sup>:

- Various fire risk management strategies have potential to generate benefits, but they should be carefully targeted. This was particularly the case for prescribed burning in the Mount Lofty region, where a general prescribed burning strategy across all areas was shown not to provide value for money, but prescribed burning in targeted areas does.
- Some strategies have particularly high costs and these are unlikely to provide value for money unless they can generate exceptional levels of fire prevention. The high cost is usually because strategies required actions over a large area.
- Benefits from reductions in fire-spread from one zone to another were relatively low in both case studies. Most benefits were generated from strategies that were applied within or close to the valuable assets. Although information about fire-spread was relatively weak, results were not sensitive to changes in the assumptions about spread within  $\pm 50\%$ .
- On average, benefits from reducing asset losses are much larger than benefits from reducing suppression costs.
- The most severe fires tend to cause most losses, even after allowing for the fact that these are rare events. This means that most benefits from fire management occur in rare events. In between those rare events, strategies that offer good value for

money on a long-term probabilistic basis may have costs in excess of benefits in most years.

The quantity and quality of available data were low for a number of key parameters. Some information was not collected, and some was not in an easily interpretable format. In both case studies the model results were found to be sensitive to several variables about which uncertainty was high. These provide a potential focus for future data collection.

### Where to now?

Being the first study of its kind in Australia or New Zealand, a number of challenges were faced, particularly around availability of suitable data. Experience in other contexts (e.g. natural resource management and agriculture) shows that, even for issues where technical research has been conducted, it is common that the research does not provide the specific data required for integrated economic assessment. This proved to be the case in this study too.

Integrated economic assessments have great potential to contribute to thinking and decision-making about fire management. It is hoped that the examples of these case studies will lead to additional studies.

Guidelines have been developed to assist fire managers to help prepare for similar integrated economic assessments. To access the guidelines in an easy-to-follow format, download Bushfire CRC *Fire Note* 124 from [www.bushfirecrc.com/firenotes](http://www.bushfirecrc.com/firenotes).

The study is being expanded in a new research project by the Bushfire and Natural Hazards CRC. The new project aims to fill key knowledge gaps for hazards such as earthquakes, floods, cyclones and tsunamis to illuminate the merits of different decision options. It spans issues related to values, risks and decision-making to deliver value for money from public investments in natural hazard management. ■

See [www.bnhcrc.com.au](http://www.bnhcrc.com.au) for a full description of this new project.

### References

1. Gibbons P, van Bommel L, Gill AM, Cary GJ, Driscoll DA et al. 2012, Land management practices associated with house loss in wildfires. *PLoS ONE* 7(1), e29212. doi:10.1371/journal.pone.0029212.
2. Gibson F and Pannell D 2014a, Integrated economic assessment of fire risk management strategies: case studies in Central Otago, New Zealand and Mount Lofty region, South Australia, available at Bushfire CRC <http://www.bushfirecrc.com/publications/citation/bf-4329>.
3. Gibson F and Pannell D, 2014b, Paying the price, Bushfire CRC *Fire Note* 124.
4. Penman TD, Bradstock RA and Price OF 2014, Reducing the risk to urban developments: simulation of cost-effective fuel treatment solutions in south eastern Australia, *Environmental Modelling and Software*, 52, 166–175.

PHOTO: BUSHFIRE CRC



New research could be used to target bushfire risk management strategies in areas that produce the most benefits per dollar.

# FPA AUSTRALIA TECHNICAL UPDATE

**By Ian Findlay**  
FPA Australia  
Technical  
Department

Since the last update in *Fire Australia* Spring 2013 (p. 10), FPA Australia and its Technical Advisory Committees have released four more technical documents to provide information, guidance and advice to the industry.

## Technical Advisory Note (TAN-02) AS 1670.1 Occupant Warning System Primary Power Source Requirements

This members-only document clarifies that the primary power source for a fire detection and alarm system to AS 1670.1-2004 is required to be capable of operating the system including, where installed, an occupant warning system to clause 3.22(b) of the standard (that is, an occupant warning system run from the detection system, not an independent sound system to AS 1670.4).

## Reference Document (RD-03) Gaseous Fire Suppression System Actuators

Another members-only document, this provides a list of actuators so that technicians can identify the actuator, whether it is in the 'set' or 'fired' position, whether it is resettable and whether a resetting tool is needed.

## Good Practice Guide (GPG-04) Annual Fire Safety Statements—New South Wales

This comprehensive members-only document provides some much-needed guidance on the objective of annual fire safety statements and the requirements and responsibilities for preparing them.

## Information Bulletin (IB-06) Selection and use of firefighting foams

This publicly available document provides information on the issues surrounding the selection and use of firefighting foams based on their firefighting performance, environmental impact and system and equipment compatibility.

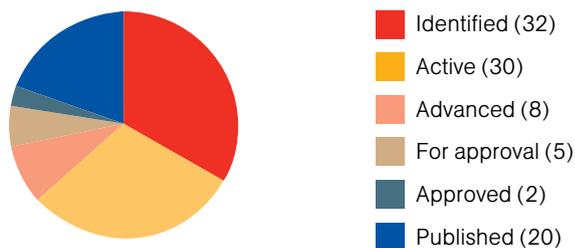
## Summary of FPA Australia Technical Documents under development

Figure 1 shows the status of FPA Australia Technical Documents and provides an overview of the number of documents at each stage of development from identification through to publication. Figure 2 shows the total number of FPA Australia Technical Documents split into those published and those in development.

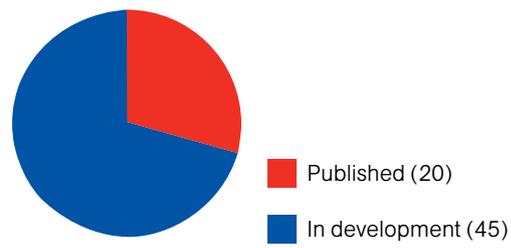
## FPA Australia Technical Documents nearing completion

Table 1 highlights some of the Technical Documents anticipated to be completed and released in next 6 months.

To access FPA Australia's Technical Documents visit [www.fpa.com.au](http://www.fpa.com.au) or [connect.fpa.com.au](http://connect.fpa.com.au) (for FPA Australia members). If you would like any further information or wish to propose a new technical document—please contact the Technical Department at [technical@fpa.com.au](mailto:technical@fpa.com.au).

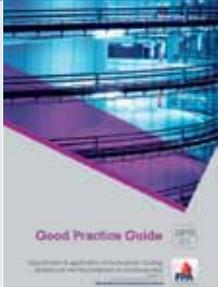


**Figure 1** Status of FPA Australia Technical Documents



**Figure 2** Total number of FPA Australia Technical Documents

**Table 1** FPA Australia Technical Documents scheduled for release by December 2014

Position statements	Information bulletins	Good practice guides
 <p>Product compliance and evidence of suitability</p>	 <p>Requirements and installation of evacuation diagrams</p>	 <p>Specification, installation and maintenance of intumescent fire dampers</p>

## PHOTOLUMINESCENT EXIT SIGNS INCLUDED IN THE NCC FOR THE FIRST TIME

Volume 1 of the 2014 edition of the National Construction Code (NCC) includes in its deemed-to-satisfy provisions for the first time the option to use either an exit sign installed to AS 2293.1 or a photoluminescent exit sign installed in accordance with Specification E4.8.

FPA Australia highlighted concerns about photoluminescent exit signs in its submission to the Australian Building Codes Board during the public comment period prior to the recent changes.

The Association's submission to the ABCB explained that FPA Australia does not consider there is adequate evidence to demonstrate photoluminescent exit signs can be equivalent or reliable substitutes for exit signs complying with AS 2293.1. The Association does not believe photoluminescent exit signs alone would satisfy Objective EO4(a) and EO4(b) or Function Statement EF4.1 or Performance Requirement EP4.2 of the NCC.

FPA Australia's submission also supported a submission from the Lighting Council Australia, which discussed in greater detail the shortcomings associated with photoluminescent signage in terms of maintaining an acceptable level of luminance and which was accompanied with data and research reports supporting this position.

Standards Australia's committee for emergency lighting in buildings (LG-007) also raised concerns with the ABCB about the ability of photoluminescent exit signs to reliably satisfy the objective of EO4 of the NCC.

In relation to this new deemed-to-satisfy compliance option allowing photoluminescent exit signage, FPA Australia would like to emphasise:

1. Anyone considering using of photoluminescent exit signs must be aware of their potential shortcomings in terms of maintaining an acceptable level of luminance and seek manufacturer advice.
2. The NCC only covers the performance requirements of such exit signs—there is no current standard or guide for the maintenance of these signs to ensure their ongoing capability of maintaining the required performance.

This lack of defined maintenance requirements has been highlighted to FPA Australia, which is investigating the development of a Good Practice Guide to cover this.

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Anyone interested in participating in the development of this guide is encouraged to contact FPA Australia's Technical Department at [technical@fpaa.com.au](mailto:technical@fpaa.com.au).



## REVISION OF EMERGENCY ESCAPE LIGHTING AND EXIT SIGN STANDARDS SUITE AS 2293

In 2013, a Standards Australia project proposal was submitted by the Lighting Council Australia for the revision of the Australian Standard suite AS 2293 (which covers installation, maintenance, safety and performance requirements for emergency lighting and exit signs for building). This project proposal was approved and FPA Australia was invited for the first time to participate on the Standards Australia committee for this project—LG-007 Emergency lighting in buildings.

The primary objectives of the revision of the AS 2293 suite of standards are to:

- remove obsolete requirements
- review the standards to reflect developments in new technologies, systems and methodologies, particularly in regards to batteries, light sources and use of computer optic design
- review the current luminance level requirements, taking into consideration the findings of a research project commissioned by LG-007 to investigate what illumination levels are required internationally for safe evacuation of a building.

Work on this project began with a kick-off meeting in October 2013 where it was agreed that three working groups be formed with each to work on one of the three standards in this suite. This meeting also confirmed the scope of the project and its timeline—it is proposed to publish the new edition of AS 2293.1 by November 2015 so it can be adopted in the National Construction Code in 2016.

Since then, a second full meeting of LG-007 was held in March this year to review the status of the revision and confirm aspects of the scope. ■

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FPA Australia welcomes anyone wishing to provide input to the revision of this suite of Standards to contact the Technical Department at [technical@fpaa.com.au](mailto:technical@fpaa.com.au) so that our staff can pass this information on to FPA Australia's representative on LG-007, Mr Russell Porteous.

# YOUTH IN ACTION— ENGAGING THE NEXT GENERATION

What would it take to engage more young people in emergency management (EM) volunteering?



**By Zoe Kenyon**  
Project Officer,  
AFAC

This was the ‘big question’ that 15 young EM volunteers tackled when they travelled from across the country to participate in the *Change It Up* event to channel the National Youth Week message ‘our voice, our impact’.

On behalf of the Australian Emergency Management Volunteer Forum (AEMVF), AFAC worked in partnership with the Foundation for Young Australians (FYA) to facilitate a three day residential workshop designed to develop ideas about how to better engage young people in EM volunteering. The event formed part of a broader National Emergency Management Project, which AFAC is managing on behalf of the AEMVF, about improving the participation of youth and culturally and linguistically diverse (CALD) communities in EM volunteering.

15 participants from volunteer agencies across Australia were shortlisted from over 90 applications. A range of agencies and jurisdictions were represented at the event; however, participants shifted from agency-specific projects to work collaboratively on their ideas for change.

The workshop was designed to provide successful applicants with skills that would transfer into their roles as young volunteers. Participants were empowered with the ability to develop, refine and articulate an idea from concept to design. They also gained a true sense of engagement with the broader emergency management volunteering sector.

## *Change It Up*—exploration of ideas

To set the context for the workshop, participants moved around the room in a world café activity, discussing their experiences as young volunteers. One of the most poignant issues from this discussion was the perceived difference between volunteers and paid emergency service workers. In particular, that the word ‘volunteer’ implied that they were somehow less qualified or not as capable of being professional in carrying out their roles in an emergency.

As the workshop progressed, it became increasingly clear that each participant was committed to their service and more so were proud ambassadors

not only for their individual agencies, but for the broader emergency management industry.

## Working towards ‘the pitch’

Throughout the workshop, the FYA team took the participants through a series of activities that worked towards building a concise two-minute pitch to be delivered at PitchUp at the conclusion of the event. Presenting to both a panel and an audience was seen as a daunting task; however, some key tools were provided to empower the young volunteers to deliver an impressive presentation.

With such limited time to present, it was important to get the attention of the panel immediately. The group explored a process for quickly and successfully engaging their audience. This process known as ‘nailing the opening’ is outlined in Figure 1.

Participants were encouraged to adopt this structure to introduce themselves and their concept for change. This assisted in providing clear direction for delivery for the presenters, and also in setting up the expectations to the panel from the beginning.

Following the workshop activities, participants worked on their scripts, rehearsing independently and to small groups to provide feedback. On the final morning, participants travelled to Melbourne for the pinnacle of the event, PitchUp, where each participant presented their idea to a guest panel.

## PitchUp

### Themes

PitchUp comprised 15 individual presentations of each of the young volunteers’ program ideas. From these the following key themes emerged:

- **Networking and relationship-building**—Participants agreed that an increase in non-operational activities would assist in team building, communication and socialisation for all members. They also felt it may help to bridge the gap between older and younger volunteers by designing activities outside of formal training operations. Moreover, there should be more opportunities for young volunteers to get together in an inter-agency networking context. Program initiatives on this theme ranged from a team-building night at a local level, to a national young volunteer networking event.
- **Better guidance for new young volunteers**—A key reason that several participants continued to be engaged as volunteers was the assistance they received from a mentor within their individual

- Agencies represented at *Change It Up***
- Country Fire Authority
  - Marine Rescue NSW
  - NSW Rural Fire Service
  - NSW State Emergency Service
  - NT Fire and Rescue Service
  - QLD State Emergency Service
  - SA Country Fire Service
  - SA Volunteer Ambulance
  - Surf Life Saving Australia
  - Volunteer Bush Fire Service WA
  - WA State Emergency Service



**Figure 1** Nailing the opening



Young volunteers participate in the *Change It Up* event at AEMI.

### PitchUp: The panel

- **Andrew Coghlan**—National Manager Emergency Services, Australian Red Cross and Chair, AEMVF
- **Hayley Bolding**—Young People Without Borders, FYA and Young Australian of the Year Finalist 2013
- **Jan Owen**—CEO, FYA
- **Shane Fitzsimmons**—Commissioner, NSW Rural Fire Service
- **Wendy Banfield**—NEMP Program Manager, Attorney-General's Department

agencies. It was proposed that if a formal mentoring program were introduced across the board, it would greatly assist in the retention of young volunteers and ensure that new young volunteers were adequately supported through the induction process.

- Engaging more young people through social media networks—*Change It Up* participants noted that social media could be better used for incident management, community engagement and promoting the work of EM volunteers. EM agencies could capitalise on the knowledge that young volunteers have in the online space by asking them to educate other members or assist in maintaining the agency's social media. This would prove beneficial for young volunteers and agencies alike, and provides an opportunity for younger volunteers to take on increased responsibility.
- Highlight the unique opportunities that EM volunteering offers—younger volunteers need to be made aware of the opportunities that exist in operational and non-operational roles. Several concepts presented indicated the possibility of giving young people more information about what opportunities are available in different EM agencies across the country. In particular, an online portal where future volunteers could match their skills and interests to different EM agencies, find out what roles are available and which of these roles they are most suited to.
- Engage with young people to promote community safety and disaster resilience through the national education curriculum—When school students learn about extreme weather events, they should also learn about the role of EM agencies in disaster response and the volunteer effort that is involved. It was suggested that this concept could be worked into the national curriculum.

It would provide an opportunity for schools to engage local EM agencies who could come and discuss their role in building disaster resilient communities and the future opportunities for students to become involved as volunteers.

### Outcome

Rather than awarding funding to a single participant to develop their idea further, as originally planned, the volunteers were collectively offered the opportunity to attend and present at the 23<sup>rd</sup> International Association for Volunteer Effort (IAVE) World Youth Conference on the Gold Coast in September. IAVE ([www.iave2014.org](http://www.iave2014.org)) is a bi-annual, global conference and it is being held in Australia for the first time in 40 years. This is an outstanding opportunity for these volunteers to be ambassadors of the industry and present on the world stage.

*“Just because we are younger and are unpaid, it does not mean we are not professionals.”*

NATHAN

The group is now meeting regularly by Skype to ensure members stay connected with one another while continuing to develop their ideas. AFAC is working closely with each participant to also connect them with appropriate industry contacts who can assist in bringing their ideas to fruition.

AFAC will produce several outputs to document the event. A Look Book will be published that outlines each of the PitchUp presentations from the event as well as a series of video clips documenting the event and presentations. These outputs will be circulated back to agencies to highlight the excellent work on their young representatives.

The level of dedication and commitment of the volunteers involved in the event was astounding. Together they will better the experience for prospective and current young volunteers as they continue their work as fine ambassadors for the national EM sector. ■

For further information on this project, please contact Zoe Kenyon via email at [zoe.kenyon@afac.com.au](mailto:zoe.kenyon@afac.com.au).

## BURNING OF THE HOUSES OF LORDS AND COMMONS

1834



### By Barry Lee, OAM

In the late afternoon of 16 October 1834, two men were burning wooden ‘tally’ sticks in a basement furnace beneath the British House of Lords. The sticks were used to record sums of money paid to the Exchequer, and were no longer required.

Anxious to finish for the day, the men shovelled the remaining sticks into an already overfull furnace and left. Overheating and fire resulted in the biggest inferno to occur in London since the Great Fire of 1666.

By around 6.30 pm, flames were spotted near the entrances to the House of Lords and the House of Commons. Within half an hour the interior of the House of Lords was fully alight. By this time, firefighters and soldiers were working hard to save the roof of the Commons, but their efforts were in vain. The collapse of the Commons roof was described as “falling with a tremendous crash with an immense volume of flame

and smoke and emitting in every direction millions of sparks and flakes of fire”.

According to Henham<sup>1</sup>, there was no loss of life, but the loss to the nation was considerable. “As well as the total destruction of the House of Lords, the House of Commons, the libraries, the robing room, the committee rooms and the Painted Chamber, there was severe damage to the Speakers’ House. Among the many valuable items destroyed was the original warrant for the execution of Charles I, several valuable paintings and a tapestry depicting the Spanish Armada.” Original British standard measurements, the standard yard and the standard pound, were also lost in the blaze.

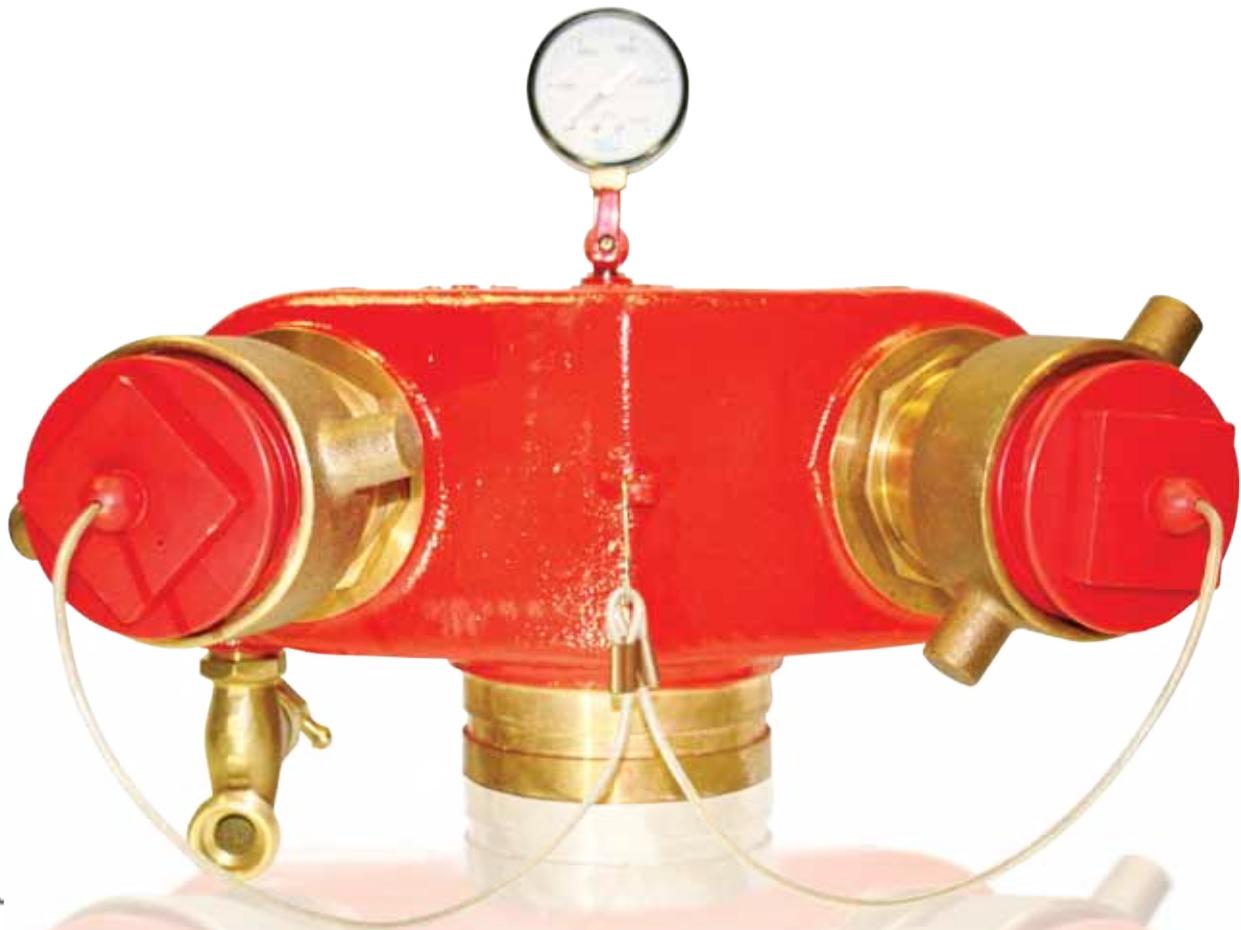
### Reference

1 Henham B 2000, *True hero: the life and times of James Braidwood, father of the British Fire Service*, Braidwood Books, Romford.

After the destruction of the Houses of Parliament, a competition was held for the best replacement design. In 1836, the designs of Sir Charles Barry were accepted. Building started in 1837 but was not completed until 1852. The House of Commons was again extensively damaged during WW II in 1941, with rebuilding only recently completed.



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# CALENDAR OF EVENTS

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Check out the dates below for upcoming public workshops or call 03 8892 3131 to find out when FPA Australia will be conducting a session near you or arrange private assessment sessions.

### ***Public assessment workshops***

**8–11 July, South Australia**  
**29 July–1 August, Queensland**  
**12–15 August, New South Wales**  
**9–12 September, Queensland**  
**22–26 September, Victoria**  
**7–10 October, Western Australia**  
**28–31 October, New South Wales**

For more information on the workshops, visit the training and education pages of the FPA Australia website at [www.fpaa.com.au/training](http://www.fpaa.com.au/training).

## **Need Qualified EAHL by December 2014?—get up to speed now and save**

Recently the Fire Protection Industry (ODS & SGG) Board notified all technicians holding an EAHL Experienced Entitlement 1–5 that, from 1 December 2014, these licences will no longer be available for new applicants or for renewal.

FPA Australia is currently offering a special discounted enrolment into the units of competency required for EAHL Qualified Persons Licence 2 and 3, from 1 April to 30 June 2014, with assessment before December 2014.

Normally priced at \$3000–\$3315 (depending on membership level), FPA Australia is offering these units for a fixed price of \$2500 for corporate members and \$2950 for all other members and non-members. No further discounts or vouchers apply.

A deposit payment is required to secure your enrolment. To take advantage of this offer please complete and return the enrolment form available by visiting [www.fpaa.com.au/training](http://www.fpaa.com.au/training) and then selecting enrolment forms, or contact [training@fpaa.com.au](mailto:training@fpaa.com.au) for more information.

## **2014 Fire Expos** **Tuesday 15 July—VIC** **Wednesday 30 July—NSW**

These fire expos are local events for local businesses and personnel in the fire protection industry and related building and construction sectors. Attendance is free, and you can also get involved as an exhibitor or sponsor.

In addition there will be informative industry seminars. Each expo is hosted by the respective State & Territory Membership Group, with representatives on hand to discuss relevant topics. For more information and to register for FPA Australia events visit [www.fpaa.com.au/events](http://www.fpaa.com.au/events).

## **Research to Drive Change online forums**

The Bushfire CRC has a number of free online forums designed to communicate to agencies the findings from the last three years of research. Online forums are scheduled through to September on:

- Extreme fire behaviour
- Beyond the incident (incident management)
- Power to the people (emergency policy)
- Living on the edge of risk
- Fire in the landscape (ecology)
- What are you telling us? (community safety)
- Awake, smoky and hot! (firefighter health and safety).

Join leading researchers and agency personnel online to discuss the research findings. The full forum schedule, registration information and short videos explaining the research findings are available at [www.bushfirecrc.com/drivechange](http://www.bushfirecrc.com/drivechange).

## **AFAC and Bushfire & Natural Hazards CRC Conference**

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## TECHNICAL ADVISORY GROUPS AND SPECIAL INTEREST GROUPS

By Kevin Burns,

Technical Administrator, FPA Australia

### TAC/1 Maintenance of fire protection systems and equipment

TAC/1 discussed a number of documents that are currently under discussion at different TACs which have which have some impact on maintenance.

### TAC/2 Fire detection and alarm systems

TAC/2 discussed various items related to detection and alarm systems including FP-002 projects, TAC/2 technical documents, and discussions held on the NBN and its effects on alarm monitoring.

### TAC/3/7 Portable and mobile equipment

TAC/3/7 endorsed documents on the date-of-manufacture stamping of extinguisher cylinders and on the safe handling of extinguishers during servicing. Both documents will now go to NTAC for approval to publish. The committee also discussed the possible development of a Standards Australia project proposal to revise AS 2444.

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

Two draft documents, one on water tanks for fire protection and another on isolation valves for fire sprinkler and fire hydrant systems, were discussed. Work on the Good Practice Guide for fire hydrant testing was conducted at a separate workshop session.

### TAC/11/22 Special hazards fire protection systems

TAC/11/22 submitted Standards Australia project proposals for the revision of AS 14520 (as AS 4214) and for the revision of AS 5062.

TAC/11/22 discussed various technical documents including an Information Bulletin on the selection and use of firefighting foams and a Good Practice Guide on oxygen reduction fire prevention systems (the first draft of which has now been completed).

### TAC/17 Emergency planning

The draft Information Bulletin on evacuation diagrams is currently being updated in line with the recently released amendment 1 to AS 3745.

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

In addition to updates on relevant Standards Australia committees, TAC/18 and TAC/19 discussed a number of possible technical documents on topics such as access panels, penetrations and fire resistant foam. The Good Practice Guide on the installation and maintenance of intumescent fire dampers is expected to be published soon.

### TAC/20 Bushfire safety

All nominating organisations on FP-020

were asked to provide a list of issues to be considered in the proposed revision of AS 3959. FPA Australia developed a list of issues based on previous TAC/20 discussions, which was reviewed by TAC/20 and submitted to FP-020.

TAC/20 also discussed technical documents on sarking, water spray systems and shelters.

### TAC/T

TAC/T continues to work on a Technical Bulletin on working within a hazardous area. ■

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# STANDARDS AUSTRALIA UPDATE

## AUSTRALIAN STANDARDS

By Kevin Burns,

Technical Administrator, FPA Australia

### FP-001 Maintenance of fire protection equipment

FPA Australia has submitted a project proposal for amendment of AS 1851-2012 to address identified technical and editorial issues. A project proposal has also been submitted for a new standard: Integrated fire protection system documentation and test procedures.

### FP-002 Fire detection and alarm systems

FPA Australia has submitted project proposals for 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).

Work on AS 3786 post public comment is continuing. Release of the Australian adoption of ISO 7240-16 for public comment has been delayed. Work continues on the revision of AS 1670.1 with the goal of completing the revision so that it can be included in the NCC 2016.

### FP-004 Automatic fire sprinkler installations

Work on the revision of AS 2118.1 *Automatic fire sprinkler systems - General systems* is progressing well.

### FP-009 Fire hydrant installations

FP-009 have received an unprecedented 1300 comments on the AS 2419.1, *Fire hydrant installations - System design, installation and commissioning public comment draft*. The committee has made a good start on reviewing these comments and will hold meetings each month to progress through these comments.

### FP-011 Special hazards systems

FPA Australia has submitted a project proposal for the revision of AS 14520 (which is to be produced as AS 4214).

### FP-017 Emergency management procedures

Amendment 1 to AS 3745-2010 *Planning for emergencies in facilities* was published on 1 May 2014.

### FP-018 Fire safety

Project proposals have been submitted for the revision of AS 1530.8.1 and AS 1530.8.2 *Testing of elements of construction for buildings to simulate bushfire attack*. A project proposal has also been submitted for a new document: Classification system for combustible facades.

### FP-019 Passive fire protection

The revision of AS 1905.1 *Components for the protection of openings in fire-resistant walls—Fire-resistant doorsets* is nearing public comment stage.

### FP-020 Construction in bushfire prone areas

A project proposal for the revision of AS 3959 *Construction of buildings in bushfire-prone areas* has been submitted.

### FP-022 Passive fire protection

FPA Australia submitted a project proposal for the revision of AS 5062 *Fire protection for mobile and transportable equipment*.

### LG-007 Emergency lighting in buildings

LG-007 is currently in the process of revising the AS 2293 suite of standards for emergency escape lighting and exit signs. ■

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To submit a contribution or to advertise in *Fire Australia*, please contact the editor:

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