

Summer
2013-2014

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AUSTRALIA Fire



14



20



34

SUMMER 2013-2014

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In this issue

- 14 Firefighting considerations for cross-laminated timber buildings
- 18 How can we build houses that better withstand bushfires?
- 20 Fire Australia Conference—The Journey to Professionalism
- 23 Barry Lee: honouring a legend
- 24 World War II bunker transformed into emergency services simulation training facility

- 26 Handbook of Disaster Policies and Institutions—a review
- 30 Insurance—are you covered?
- 32 Global fire agencies join forces
- 34 Fire in the landscape—lessons learned
- 36 State-of-the-art fire protection in the freezing cold
- 38 Carbon dioxide—a unique fire extinguishant (part 2)
- 44 Wet chemical kitchen fire suppression systems
- 46 Outstanding industry service recognised

About Fire Australia

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 Cooperative Research Centre (Bushfire CRC).

We aim to bring the latest news, developments and technical information to the fire protection industry, emergency services and fire research organisations. Fire Australia is produced quarterly and distributed throughout Australia and New Zealand.

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

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REGULAR FEATURES

- 5 In this edition
- 6 News
- 48 Calendar of events
- 49 FPA Australia TAC and SIG update
- 50 Standards Australia update

ADVERTISER LISTING

- 2 Pertronic
- 4 Fire Factory
- 7 Fusion
- 9 FireSense
- 10 Archer Testing
- 13 Alan Wilson Insurance Brokers
- 17 Xtralis
- 27 Bulbeck
- 29 FLIR
- 43 Fire Protection Technologies
- 51 Firebox
- 52 Viking

Our cover: The impact of disasters on people's thinking and on the political agenda is much higher now than a few years ago due in part to the Black Saturday bushfires, which burnt to the outskirts of Melbourne.
Photo: Nathan Maddock, Bushfire CRC.



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Welcome to *Fire Australia* Summer 2013-2014



By Scott Williams
Chief Executive Officer, FPA Australia

In my closing address at the landmark Fire Australia 2013 Conference and Exhibition in Sydney, I remarked that the conference was indeed an important step on the journey to professionalism for the fire protection industry. At the same time, I commented that this journey was not likely to have a final end point, but would be an ongoing process.

Continuous professional development is not a new concept for many industries, but it is one that is only now beginning to find its place in our industry. During the conference we were privileged to hear from many different individuals representing regulators (local and international), standards organisations and other peak bodies. They all reinforced the importance of professional development and corresponding professional recognition.

One of the emphatic themes touched on by many of these presenters was the importance of the industry taking control of its own destiny and shaping its own professional recognition schemes and programs. This was not lost on the

conference delegates. As I moved around the conference and spoke with many attendees, the conversations often turned to professional recognition, accreditation, education and just how important all of these elements are for our industry.

This is new ground for fire protection in Australia. As we start the new year afresh, we should reflect on just how far we have come and take pride in the significant steps being taken to ensure fire protection retains its standing as a credible, professional and vital component of the building and construction industry.

At the same time, we must not become complacent. As reinforced by so many presenters at the conference, we now have the opportunity to take control of our industry and the way individuals working in it are recognised for their skills, knowledge and competence. If we do not adequately grasp our chance to do this, it will be taken from us by government as soon as it sees cause.

In his presentation at the conference, Wilhelm Harnisch, CEO of Master Builders

Australia (MBA), remarked that industry accreditation was infinitely preferable to heavy-handed regulation by government.

Mr Harnisch noted that, while the MBA has had some success in this space, onerous regulation was still stifling productivity in some areas. As an industry, it is critical we avoid such a situation.

The only way to demonstrate to regulators, customers and the community that they can trust individuals and businesses operating in the fire protection industry is through a rigorous accreditation system. In 2013, our Fire Protection Accreditation Scheme (FPAS) launched with the 'inspect and test' class. In 2014, the scheme will expand to cover the 'design and certify' fields. We are grasping our chance to control our future.

In closing the conference, I invited all attendees to join us on the journey to professionalism and I extend that same invitation to all readers of *Fire Australia*. It is a journey without an ending, but it is critical we seize the opportunity to choose the road that we travel. ■

NSW and Tasmania research released



Dr Jim McLennan interviewing residents near Coonabarabran, NSW.

PHOTO: NSW RURAL FIRE SERVICE

The reports of Bushfire CRC task forces set up following the January 2013 bushfires in Tasmania and New South Wales have been released.

After fires at Coonabarabran, Yass and the Shoalhaven, the NSW Rural Fire Service (NSWRFS) engaged the Bushfire CRC to conduct community-based research focusing on people's preparation, decision-making and actions during the fires.

NSWRFS Commissioner Shane Fitzsimmons said: "These were some of the worst fire conditions we have ever experienced in NSW. While more than 50 homes were destroyed, not a single human life was lost. This gave us an opportunity to take a close look at what people did before, during and after the fires, to learn from their experiences."

Bushfire CRC researchers conducted 238 interviews around the areas affected by the fires. The major findings were:

- Many people had a basic plan for what to do when threatened by a bushfire, but few had documented it or used the NSWRFS Bush Fire Survival Plan kit to document their response.
- Most interviewees felt well prepared and had prepared their family much more than their home and property. More than half had cleared space around their home.
- Interviewees, once they received information or warnings, often sought more detailed, localised or updated information, such as from local RFS sources, friends, neighbours and the media.
- As the fires spread, the naming of fires based on their starting point did not reflect their current location, leading to some misperceptions of fire position for some people.
- While telephone alerts are now the preferred method of warning for many in the community, many interviewees were unable to receive messages due to a pre-existing lack of mobile phone coverage in the affected areas and this contributed to their delayed decision-making.
- Few residents understood the implications of the different fire danger levels on their safety, and actions to take at each, apart from 'catastrophic'.

The Tasman Peninsula research was released as part of the 2013 Tasmanian Bushfires Inquiry. The Bushfire CRC task force, commissioned by the Tasmania Fire Service interviewed 245 residents across the Tasman Peninsula. Tasmania Fire Service Chief Officer Mike Brown attributed the fact that there was no loss of life to the implementation of Bushfire CRC research.

After huge property losses during the October 2013 bushfires, the NSWRFS has again commissioned the Bushfire CRC, in partnership with the Bushfire and Natural Hazards CRC, to conduct more research in fire-affected areas around Port Stephens, the Blue Mountains and the Southern Highlands.

The NSW and Tasmania task force reports can be viewed on the Bushfire CRC website, www.bushfirecrc.com/research/contract.

PhD research adds value

The strength and diversity of the Bushfire CRC research and education program was on display at a showcase in Melbourne in November. The showcase followed the Bushfire CRC annual general meeting and included presentations from senior researchers and agency representatives on the value of Bushfire CRC research.

Three students in the PhD program spoke about the progress of their studies and how they linked in with the ongoing work of fire and land management agencies. Dr Briony Towers, who has now completed her PhD through RMIT University, studied bushfire preparedness messages for children. Much of her work has

been adopted by agencies for their community education programs for fire and other natural hazards.

Grace Vincent, from Deakin University, presented her research into firefighter fatigue. David Barton, from RMIT University (right), talked about the differences between resilience and recovery from his studies of the 2009 Black Saturday fires in Marysville.

Three more students were profiled in videos. See more about the current work of Brenda Mackie and the completed work of Rowena Morris and Jaymie Norris, who are both now employed by CRC partner agencies, at www.bushfirecrc.com/research/event/2013-agm.



Dr Brad Aisbett explains how the Awake, Smoky and Hot project is helping firefighter health and safety.

Fire research on TV

The Awake, Smoky and Hot Bushfire CRC project has been featured on ABC TV News and Network Ten's *Scope* program. Airing across South Australia on ABC News, joint project leader Associate Professor Sally Ferguson and researcher Dr Brad Smith, from Central Queensland University, explained how the research was helping firefighter health and safety. On Network Ten's *Scope* program, which is aimed at educating children about science, joint project leader Dr Brad Aisbett from Deakin University appeared in a special fire science episode. Read all about the Awake, Smoky and Hot study in *Fire Australia* Summer 2012-2013 issue, page 28.



All hazards research launched

The Bushfire and Natural Hazards CRC was officially launched on 10 December 2013 on the lawns in front of Parliament House, Canberra, by the federal Minister for Justice, the Hon Michael Keenan. The new CRC will draw together all of Australia's fire and emergency service authorities and the nation's leading experts across a range of scientific fields to explore the causes, consequences and mitigation of natural disasters.

The Chairman of the Bushfire and Natural Hazards CRC, Dr Laurie Hammond, said the CRC will build on 10 years of high quality scientific research at the Bushfire CRC and will expand 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.

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.

For more information on the Bushfire and Natural Hazards CRC visit www.bnhcrc.com.au.

The Minister for Justice presents the Bushfire and Natural Hazards CRC Chairman with a plaque to commemorate the CRC's launch.



Alarm signalling equipment providers and monitors encouraged to test equipment at NBN plug bench facility

The progress of installation of the National Broadband Network (NBN) means that the first disconnections of copper infrastructure will start in May 2014 in the 15 areas that have already been completed. It is critical that all FPA Australia members and related stakeholders are aware of the potential implications of this changeover for fire protection systems and equipment.

This is particularly important for those involved in the manufacture, distribution, installation and monitoring of alarm signalling equipment (ASE). ASE provides the critical link between a fire indicator panel, sprinkler control valve or other monitored device, the monitoring company and the responding fire brigade.

All ASE in Australia has, until now, operated on the existing analogue copper telephony infrastructure. There is now a need to ensure all equipment continues to operate effectively and correctly in the field when switched over to NBN technology.

An NBN plug bench facility has been established to enable ASE providers, distributors and monitoring companies to test their equipment's interoperability with participating retail service providers' (RSPs) NBN telephony services. There is no cost to companies conducting interoperability testing at the facility, where you can gain insights into your devices' compatibility with the participating RSPs NBN telephony service.

To test equipment interoperability at the NBN plug bench, register your interest by completing the form available on request by emailing technical@fpaa.com.au and then returning it to plugbench@nbnc.com.au.

General information about the NBN can be found at nbnc.com.au.

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Volunteers needed for study on fighting firefighter fatigue

PHOTO: CRA COMMUNITIES AND COMMUNICATION

Bushfire CRC PhD student Grace Vincent, from Deakin University, is recruiting firefighters from across Australia to help her gather important data on firefighters and sleep during multi-day deployments. Currently there is no data about the sleep length and quality that firefighters experience during multi-day deployments. This study is important in managing firefighter health and safety, while still providing ongoing protection against bushfires.

Participating in the research is easy and it will not impair suppression tasks. Firefighters who take part in the study will need to:

- 1 Wear a wrist activity monitor for three days before a deployment, during the deployment and for three days after deployment. This will allow sleep quality and quantity when actively deployed to be compared with an individual's usual sleep patterns.
- 2 Wear a shirt pocket monitor during fire suppression to measure the amount of physical activity performed on the fireground.
- 3 Complete a sleep and work diary. This diary will give an indication of total sleep hours and perceived fatigue levels.

To find out more information or to express interest in participating in this vital research, email Grace at gvincent@deakin.edu.au.

Important resolutions passed at FPA Australia AGM



FPA Australia National President Trevor Voevodin (left) and Senior Vice President Chris Orr.

FPA Australia's 2013 national annual general meeting in Sydney on 19 November passed several critical resolutions.

These included three important changes to FPA Australia's Memorandum and Articles of Association to allow the association to comply with relevant legislation for not-for-profit organisations and to effect other changes to enable the association to remain a contemporary and relevant member organisation into the future.

The three alterations to the M&AA were to:

- ▶ make changes where necessary to comply with the *Fair Work (Registered Organisation) Amendment Act*
- ▶ change the articles where necessary to comply with the *Corporations Act* and the introduction of the *Australian Charities and Not-For-Profits Commission Act*
- ▶ remove Section 16, Divisional Committees, to allow for the introduction and implementation of a new regional membership structure.

All three resolutions were passed with strong support and the necessary amendments are underway to apply these changes. The new M&AA will be available from the FPA Australia website soon.

Thanks to all members who voted, either directly or by proxy, for taking the opportunity to have your say and positively shape the future of the association.

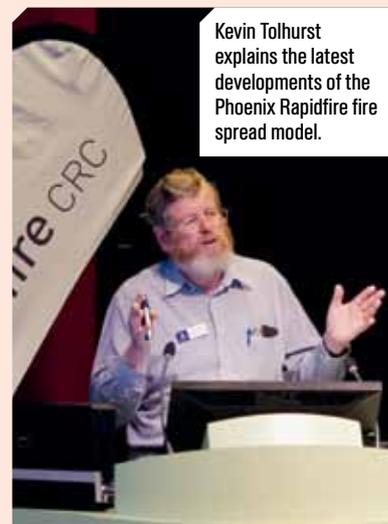
Symposium science

The latest fire behaviour science was presented at a symposium attended by 140 fire and land management operational practitioners and researchers in Canberra in October 2013.

The Fire Behaviour—The State of the Science symposium updated the skills and knowledge of fire and land management practitioners. It was hosted by CSIRO Ecosystems Science in partnership with the Bushfire CRC, ACT Parks and Conservation, the ACT Rural Fire Service and the NSW Rural Fire Service.

The symposium signified 60 years of fire behaviour research at CSIRO

and also discussed the latest findings from ten years of fire behaviour research by the Bushfire CRC. Bushfire CRC research was presented by Andrew Sullivan, Jim Gould, Miguel Cruz and Matt Plucinski from CSIRO, Jeff Kepert from the Bureau of Meteorology, and Kevin Tolhurst from the University of Melbourne.



Kevin Tolhurst explains the latest developments of the Phoenix Rapidfire fire spread model.

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3.45 bar (50 psi)	2.41 bar (35 psi)	1.03 bar (15 psi)-UL 1.38 bar (20 psi)-FM	1.57 bar (22.7 psi)	1.52 bar (22 psi)	2.07 bar (30 psi)
12 sprinklers	12 sprinklers	12 sprinklers	185.81 m ² (2000 ft ²)	15 sprinklers 139.35 m ² (1500 sq. ft)	6 Sprinklers (3 sprinklers on 2 lines)
4542 + L/min (1200 + gpm)	4542 + L/min (1200 + gpm)	4542 + L/min (1200 + gpm)-UL 5117 + L/min (1352 + gpm)-FM	6056 + L/min (1600 + gpm)	4542 + L/min (1200 + gpm)	Sys. demand 3134 + L/min (828 + gpm)
946 L/min (250 gpm HS)	946 L/min (250 gpm HS)	946 L/min (250 gpm HS)	1893 L/min (500 gpm HS)	1893 L/min (500 gpm HS)	946 L/min (250 gpm HS)

Building Height: 10.67 m (35') Storage Height: 9.15 m (30') Coverage: up to 13.38 m² (144 ft²)

K-14.0 ESFR	K-16.8 ESFR	K-25.2 ESFR	N252 EC
9.29 m ² (100 ft ²)	9.29 m ² (100 ft ²)	9.29 m ² (100 ft ²)	13.38 m² (144 ft²)
5.17 bar (75 psi)	3.59 bar (52 psi)	1.38 bar (20 psi)-UL 2.07 bar (30 psi)-FM	2.76 bar (40 psi)
12 sprinklers	12 sprinklers	12 sprinklers	8 sprinklers
5507 + L/min (1455 + gpm)	5496 + L/min (1452 + gpm)	5117 + L/min (1352 + gpm)-UL 6268 + L/min (1656 + gpm)-FM	Sys. demand 4826 + L/min (1275 + gpm)
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Call for abstracts opens for AFAC 2014

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The call for abstracts for the AFAC and Bushfire and Natural Hazards CRC 2014 conference is now open. The conference will be staged from Tuesday 2 to Thursday 4 September 2014 in Wellington, New Zealand.

The theme will be '*After disaster strikes: learning from adversity*'. Natural and man-made disasters strike all countries, and the Asia-Pacific region is no exception. Examining how emergency management services, land managers and communities prepare, respond to and assist with recovery is vital to developing evidence-based policy and practice for the future.

This conference will bring together and share the combined wisdom developed from experience, research and analysis across the industry to enable a deeper understanding of the approaches needed to cope successfully with disasters.

The program will address several core topics:

- 1 Climate, landscape and environment
- 2 The impact of disasters
- 3 Supporting our people through adversity

- 4 Building capability
- 5 The involvement of the emergency services in recovery
- 6 Resilience.

The format across the four days will include a Research Forum on Tuesday 2 September followed by a two-day conference program on Wednesday 3 and Thursday 4 September.

A one-day professional development program will be held on Friday 5 September, along with three field study tours to Christchurch, the Upper South Island and the Crisis Coordination Centre in Wellington.

Details of the professional development program and field study tours are available on the conference website.

The closing date for abstract submissions is Friday 21 February 2014. To submit an abstract, go to www.afac.com.au/events/conference/program/abstracts.

For further information on the conference, including speakers, registration details, available hotels and trade and sponsorship opportunities, visit www.afac.com.au/conference.

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Harry W Marryatt portrait donated to FPA Australia National Office

FPA Australia is proud to have received an original, hand-painted portrait of association founder and a legend of the Australian fire protection industry, Harry W Marryatt AM.

The portrait was presented to CEO Scott Williams (pictured right) in November by Mr Marryatt's daughter, Heather Holloway (left). The portrait, painted by Australian artist Charles Wheeler in 1956, had hung in her family home for many years.

Harry Marryatt was the founding Chairman of the Australian Fire Protection Association (AFPA) from 1970-75, before the merger that created FPA Australia. Mr Marryatt was President Emeritus of the association as well as being the first Honorary Life Member.

The portrait will hang in the FPA Australia reception area at the national office at Blackburn North, Victoria. The association is grateful to Mrs Holloway and the Marryatt family for this wonderful donation.

AIIMS-4 AIDES-MÉMOIRE MOBILE APP AVAILABLE NOW

AFAC's new AIIMS-4 Aides-mémoire app is now available for purchase. The app is an essential guide for all those involved in managing incidents and emergencies. It covers all the AIIMS-4 roles and their functions, plus has handy checklists to prompt thinking and help memory when under pressure.

The app, which was developed with sponsorship from Tait Communications, is a mobile tool that contains all of the content in the AIIMS-4 Aides-mémoire and can be loaded on Apple and Android smartphone devices and tablets.

Once the app is downloaded and installed on your phone or tablet it will no longer require an active internet connection for the full content to be accessed. The app can be downloaded from iTunes or Google Play for \$5.99.

FPAS Recognised Business - Fire and Emergency Services SA: committed to professionalism

The number of companies taking up FPAS Business Recognition continues to grow strongly with Fire & Emergency Services SA (FESSA) the first South Australian business to get on board.

FESSA specialises in fire protection inspection, testing and maintenance. Managing Director Alan Short said FPAS was a perfect way to promote his company's strong reputation for skills, knowledge and proficiency.

"Since 2007 we have been seeking qualifications and recognition for the work we do; we see that inspection and testing require just as much skill and knowledge as being an electrician or a sprinkler fitter," he said.

"By the end of 2015 we will have all our staff qualified (in Certificate II or III in Fire Protection Inspection and Testing). This is a significant expense, but something that we see as very important as a company and as a profession."

Mr Short has long been a strong supporter of accreditation and was passionate about being an early adopter of FPAS as soon as it was launched in July 2013. FESSA was among the first businesses in Australia to register for Business Recognition and the first company in South Australia to achieve individual accreditation for staff and company recognition.

"Customers value credibility and integrity and FPAS is one way we can clearly demonstrate these important attributes," Mr Short said. "At the same time our staff see the FPAS individual accreditation as formal recognition of their skills in inspection and testing, increasing their pride in their work and in themselves.

"FPAS allows us to prove to our clients that we know what we are talking about when it comes to fire protection inspection and testing. Many companies tell their clients they know what they are doing, but only through FPAS can you actually prove it!"

FPA Australia congratulates the FESSA team for its ongoing support and dedication to professionalism through FPAS.

The FESSA team (shown above right, pictured left to right) are Gary Felton, Peter Goller, Robert Short, Alan Short and Peter Strickland.



Abuzz on social media

The Bushfire CRC and Bushfire and Natural Hazards CRC (BNHCRC) both use social media to disseminate research information, with the Bushfire CRC recently passing 1,000 likes on Facebook and 500 followers on Twitter. Sarah Grady, from Moree in NSW, was the 1,000th person to like the Bushfire CRC Facebook page, winning her a pack of Bushfire CRC goodies including a Fire Note 101 book. Ms Grady is a member of the Moree Rural Fire Brigade and looks forward to sharing the research resources with her colleagues. Make sure you don't miss anything by following both the Bushfire CRC and BNHCRC on Facebook and Twitter.





Journal first

The Ecological Society of America journal, *Frontiers in Ecology and the Environment*, recently published a free online issue on prescribed burning in fire-prone ecosystems around the world. The Bushfire CRC contributed to this important issue and Bushfire and Natural Hazards CRC CEO Dr Richard Thornton was a guest editor, along with Jeremy Russell-Smith from Charles Darwin University.

View the entire journal for free on the ESA website at www.esajournals.org/toc/fron/11/s1.



FPA Australia board of directors election results 2013

FPA Australia has announced the results of the 2013 elections for its board of directors.

The Returning Officer, Neil Bibby, declared Trevor Voevodin and Bill Lea as successfully re-elected to the board for a three-year term.

FPA Australia CEO Scott Williams congratulated Mr Voevodin and Mr Lea on their re-election. "The re-election of directors sends a strong message of support and trust from the broader membership of both the individuals who have been elected and the overall board," he said.

"The past year has been one of positive change and both Mr Voevodin and Mr Lea have contributed significantly to the many initiatives of the association; in particular, the successful development and launch of the Fire Protection Accreditation Scheme has been a milestone both for the industry and association."

Following the 2013 AGM, which was held in Sydney on 19 November, the board met to decide on its executive director positions for the coming year: National President, Senior Vice-President, Junior Vice-President and Treasurer.

The executive directors are National President Trevor Voevodin; Senior Vice President Chris Orr; Junior Vice-President Graeme Thom; and Treasurer Bill Lee.

Books strengthen bushfire safety

Two books launched by the Bushfire CRC highlight the breadth and depth of Australia's national bushfire research program.

The launch event, held in Melbourne in October, was hosted by Bushfire CRC Chairman Len Foster and AFAC CEO and Bushfire CRC Director Stuart Ellis for the fire, land management and emergency service sectors. The two books demonstrate the extensive reach of Bushfire CRC research and are very different in content and style. They are:

Handbook of disaster policies and institutions—improving emergency management and climate change adaptation by Bushfire CRC research leaders Professor John Handmer, from RMIT University, and Professor Stephen Dovers, from the Australian National University.

Making a bushfire survival plan? Involve your kids! by Dr Briony Towers from RMIT University (ebook).

Mr Ellis said: "Both products demonstrate that the Bushfire CRC research program has breadth, depth and a multitude of potential audiences."

Aimed at policy makers and operational personnel, the updated and revised second edition of the *Handbook of disaster policies and institutions* includes new coverage of climate change adaptation, which has rapidly become central to disaster and emergency planning and management. The book is an essential handbook for practitioners across the world seeking to improve the quality, robustness and capacity of their disaster management mechanisms. An extract of the book is featured in this issue of *Fire Australia*, (see page 26).

Making a bushfire survival plan?, which was profiled in the Spring 2013 issue of *Fire Australia*, is based on the PhD research of Dr Towers. Funded by the Bushfire CRC, Dr Towers investigated children's understanding of causality and prevention as applied to the bushfire context. Dr Towers also examined the role of parents, friends and teachers in the development of children's bushfire understanding.

Designed for parents to help discuss bushfire preparation and safety with their children, the ebook is interactive and engaging, outlining how the whole family can help prepare for bushfire. The ebook is available from the Bushfire CRC website by searching for 'ebook'. It is a free download and can be viewed on any tablet device or PC.

A third book, by Bushfire CRC researcher Dr Michael Eburn from the Australian National University, was also recently released. The fourth edition of *Emergency Law* covers aspects of the law that relate to the emergency services. The book can be purchased from www.federationpress.com.au.



Ebook author Dr Briony Towers at the launch of *Making a bushfire survival plan? Involve your kids!*



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Firefighting considerations for cross-laminated timber buildings

Timber framing has been used extensively in Australia for individual dwellings and for low-rise residential construction for many years. Timber framing in single-storey warehouses and commercial buildings has also been common. However, the Building Code of Australia has limited construction with load-bearing timber to three storeys, at least if the prescriptive requirements are followed.

By Peter Johnson, Richard Hough and David Barber, Arup Australasia, and Rob Llewellyn, Built Environment Consultant, AFAC

Historically, there was a move away from timber in multi-storey buildings in the UK after the Great Fire of London in 1666 and later fires in cities such as Chicago and New York, which spread rapidly between timber buildings constructed close together. Legislation and building regulations introduced after these major conflagrations required the introduction of non-combustible construction, which still features in Australian building regulations today.

In recent times, the UK, Canada and New Zealand have joined countries in Europe in promoting the benefits of the greater use of timber in the construction of residential as well as commercial buildings.

Timber construction in Australia is now being considered by several organisations. The key reasons for this being:

- greater availability of timber supplies globally for construction
- improved thermal insulation leading to energy efficiency
- other longer-term sustainability and life cycle/CO₂ benefits
- greater opportunities for prefabrication and faster construction.

The development of cross-laminated timber (CLT) and other laminated massive timber products in Europe and North America has revolutionised and revitalised timber construction in several countries. These laminated timber products, commonly produced as beams and columns but increasingly produced in panel form for prefabricated walls and floors, have significantly reduced building construction times. This has been aided by factory cutting of door, window and services openings and the ease of manipulation of lighter building sections on site.

Another factor in CLT's acceptance in Europe and North America has been their extensive testing and compliance certification. More than 100 buildings have been constructed in recent years to provide examples of construction techniques and gain approvals. Fire brigades have had the opportunity to review the designs of these buildings and the underlying analysis that has been used to support them.

A well-known CLT building in the UK is the

Stadthaus apartment building in Murray Grove, London. The London Fire Brigade was involved in the review of the design of this building.

Stadthaus comprises nine storeys (eight in timber, the ground floor in reinforced concrete) built with CLT timber panels. It has no sprinklers, as per current UK requirements for these residential buildings.

The building has 90-minute Fire Resistance Level (FRL) structural load-bearing walls and floors. This 90-minute fire rating requirement is provided by an internal lining of 30-minute FRL plasterboard plus 60 minutes of FRL charring of the CLT timber. With a charring rate of approximately 0.7 millimetres per minute (42 mm/hr), sufficient unburnt timber remains after 60 minutes of fire exposure to provide structural stability.

Engineered wood

CLT is an engineered wood panel comprising layers, or veneers, of timber with each layer perpendicular to the adjacent layer and glued together with special adhesives to form a structural panel. It can be built to thicknesses of up to 500 mm, although 150–200 mm is more common, and can be used to form structural, load-bearing walls and floors.

CLT and other laminated timber products of significant thickness are what is called in Europe 'massivholz', or in the United States 'massive timber', systems. This is to distinguish these timber products and their structural and fire performance as being very different to the light timber framing we have traditionally thought of as timber construction in Australia.

Conceptually, it is like trying to ignite a thick log of wood compared with a match or thin sliver of timber. The surface area to mass or volume is much less with CLT systems compared with typical 'four by two' construction, which ignites and burns more easily.

The 'massive' CLT has much better resistance to ignition. The regulated charring of these larger timber sections can be calculated, after fire exposure, to leave residual timber for strength and the prevention of collapse, with the char providing a degree of insulation to the unburned timber beneath.

In Europe CLT products are based on spruce.



The Docklands Library, under construction in Melbourne, is being built with cross-laminated timber.

Yellow safety sign with text: "Warning: Potential Hazard" and "Please do not touch"

Yellow diamond-shaped sign with text: "VTF"

Red scissor lift with text: "FACE", "1800 874 777", "1930"

However, in Australia, once local production starts, CLT is likely to be based on radiata pine, which has structural and fire characteristics equal to or better than spruce.

Australian CLT buildings

The first CLT building in Australia, Forte, constructed by Lend Lease in Docklands, Melbourne, is claimed to be the tallest timber apartment building in the world. CLT was also used by Lend Lease for the nearby Docklands Library project. Other CLT projects are in planning stage.

Firefighting considerations

AFAC has established a committee to look at the fire safety aspects of CLT buildings to assist fire brigades to better understand the issues with CLT construction. The first and foremost role of fire brigades is to engage in the Fire Engineering Brief (FEB) and building approval process. Certainly, the International Fire Engineering Guidelines encourage their involvement.

This will allow the fire safety engineers, architects and other designers to better understand how fire brigades will fight fires in these buildings, although their tactics are likely to be little different to those employed in other forms of construction.

Key elements of CLT designs that fire brigades require include:

- structural design—any potential for collapse during search-and-rescue and internal fire attacks
- suppression—availability of water from hydrants to control fires internally and, if necessary, external fire spread and protection of adjacent buildings
- automatic sprinklers—required for early control of a fire situation

View of the inside of the fire stairs at the Forte building, Docklands, Melbourne. It was the first cross-laminated timber building in Australia.



- quality of linings internally and as external facades in order to minimise rapid fire spread
- the design of concealed spaces and prevention of potential for damaging vertical and horizontal fire spread through such spaces
- protection of stairs—fire isolation and sprinkler protection
- construction fire safety and firefighting planning.

Overseas interest

Since the completion of the Forte building and with CLT becoming increasingly popular overseas, AFAC and Lend Lease have received enquiries about the use of CLT construction and fire safety precautions.

A TV company in South Korea recently filmed a show called *I Love Wood* and visited Melbourne to film at the Forte building. The company was particularly interested in occupant reaction to living in a timber building.

Conclusions

- Buildings of CLT construction are starting to be designed and built in Australia, following practice in other countries where timber is a more traditional form of construction.
- There is international best practice to be followed for design and prevention of fire during construction using CLT products and systems.
- CLT is a 'massive' form of timber construction, very different to lightweight timber construction traditionally used in Australia.
- There are several firefighting considerations with CLT, some of which may represent increased risks for firefighters and which need to be addressed in design.
- There are some real benefits in thermal efficiency and overall sustainability for buildings constructed using CLT systems. ■

Acknowledgement: The contribution of David Sloan to the original ideas and drafting of this paper, as presented to the AFAC conference in 2012, is gratefully acknowledged.

More information

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How can we build houses that better withstand bushfires?

By Douglas Brown,
Bushfire CRC PhD
student, University of
Sydney

THE CONVERSATION
This article originally appeared in *The Conversation*,
theconversation.com.



Smaller windows, a window sprinkler system and a non-combustible balcony are features that can help protect a house from bushfire.



PHOTOS: DOUGLAS BROWN

Houses can be great to live in, as well as offer increased bushfire protection, such as this home in Canberra.

As we witnessed in September and October 2013 in NSW, transferring the suburban house into a setting susceptible to bushfires causes a lot of problems. Put simply: if you are going to live in a bushfire-prone area you should have a home that is designed and built differently. Our challenge is to create a new, better architectural form for bushfire-prone areas and to develop a way to upgrade existing homes.

Building to a standard

Regulators have sought to improve the bushfire protection of the standard Australian house by implementing measures from AS 3959 *Construction of buildings in bushfire-prone areas*.

This standard improves the fire performance of each building component, but as yet does not describe how these components could be assembled into a building. This design process is particularly complex; there is no one perfect solution, but rather a variety of options that can be selected for any individual building site.

Many organisations have been working in this area: CSIRO, AFAC, the Bushfire CRC, the Fire Protection Association Australia and several state and territory fire agencies and Australian tertiary institutions. I have been researching this area for my PhD and hope my findings can push the process ahead a little.

I asked residents in bushfire-prone areas which parts of their home they would take shelter in during a bushfire and which parts they would avoid. What was surprising was the large range of responses for both these questions.

While the bathroom was the most popular choice for taking shelter, with a focus on the ground floor to facilitate escape, there were up to 16 other places where residents planned to take shelter.

There were up to ten different places residents would avoid during a bushfire. They fell into four main categories: spaces with large amounts of glass facing the fire threat; lounge or living rooms; upstairs (because of limited escape); and the parts of the house closest to the direction of the expected bushfire threat.

Architects could use this knowledge when designing future homes in bushfire-prone areas. Bathrooms, for example, could be located at the junction of two outside walls and include an external door. Large expanses of glass facing the direction of the fire threat could be replaced with low walls with windows above.

The same residents were asked how their house could be improved to withstand a bushfire. They suggested bushfire shutters, roof sprinkler systems, non-combustible decking and verandas, mesh flyscreens, an underground area and increasing the cleared area around the house.

If incorporated, each of these would have to be validated, tested and improved by industry experts. For example, a rooftop sprinkler system would require both a water supply and a generator to function. If the connections for either of these were inadequate the system would fail. Further research may produce ways to improve the reliability of these components.

There will need to be more work done on the materials we can use for future buildings. Researchers should also look at alternative options, such as having part of the house constructed underground or built into the side of a sloping block.

Not all is lost

Somewhere among the heartbreak of losing a home is the future opportunity to rebuild better than before.

This is a chance to both improve the fire protection



PHOTO: NATHAN MADDOCK

of the house and make it energy efficient by trapping, storing and re-using energy and water. This is particularly relevant when the supply of grid power and mains water is interrupted, restricted or ceases altogether during a bushfire.

Thought should also be given to making the home a pleasant place to live, one that nurtures family life and individual reflection.

All of these things are achievable, but building such a house requires residents to change some of their perceptions about how their home will look and function.

Future homes are likely to be smaller, with fewer windows and no external timber. They will require regular maintenance, keeping energy efficiency devices in good condition and maintaining the carefully planted and cleared area around the house.

Making bushfire-responsive houses affordable to the majority of residents is a challenge that the architecture profession may wish to contribute to in several ways. Architects could elect to volunteer their services and help individual families to rebuild. However, this is a large and time-consuming task.

An architectural competition could be set up to find the most cost-effective designs that mitigate or remove the ways flying embers and direct flames contact from a bushfire gain entry into a house.

Having a resource of already prepared designs would be good. The painful dilemma of research in this field is that it takes time; people who have recently lost their homes have very real needs right now. For me it is personal, as many of the 252 residents who generously completed my questionnaire live in Springwood and other areas adversely affected in the Blue Mountains in October 2013.

Next steps

I believe homes in bushfire-prone areas must achieve four integrated outcomes: increased bushfire protection, energy efficiency, affordability and, most of all, they should be a delight to live in.

It is possible to achieve all of these outcomes, but it will require looking at how they work independently and potentially together. This will become my post-doctoral research and be looked at from three perspectives: the design of future buildings in bushfire-prone areas; improving the fire performance of existing non-compliant AS 3959 buildings in bushfire-prone areas and rebuilding after a bushfire event. ■

Douglas Brown is writing his PhD and is aiming to finish in mid-2014.

Building a house in the bush that is not designed for the bush can be problematic.



Fire Australia 2013 Conference & Exhibition

THE JOURNEY TO PROFESSIONALISM— ENHANCING PROFESSIONAL STANDARDS ACROSS THE FIRE PROTECTION INDUSTRY

20–21 November, Sydney Convention and Exhibition Centre

By Joseph Keller,
Communications
Manager, FPA Australia

The 2013 Fire Australia Conference and Exhibition was a landmark event for the fire protection industry. It was the largest and best attended Fire Australia conference ever held and represented a critical turning point for the industry, with many of the presentations focusing on the need for professional recognition and standardisation.

These themes were broadly reflected in the majority of the highly insightful presentations in the strategic stream from local and international speakers. The technical stream offered practical educational content for practitioners working in fire protection. Despite 2013 being the first year of the two-day/two-stream format, these technical sessions were particularly well attended.

The event also featured the annual charity dinner,

an expansive trade show exhibition and a full partners program. With so much to see and do, the conference attracted close to 1000 people over the two days—a new record! This included 327 delegates, 453 trade show attendees, more than 40 diverse exhibitors over 61 booths and a total of 126 exhibition staff on site.

This article is a summary of key highlights of the conference and exhibition. If you were not able to attend you can order a copy of the proceedings on a USB by contacting the FPA Australia events team on events@fpaa.com.au. Videos of individual streams or the whole conference are also available for purchase.

If you require an application form for continuing professional development purposes or any other Fire Australia event information go to www.fireaustralia.com.au.

DAY 1: Wednesday 20 November

Opening: Shane Fitzsimmons AFSM, Commissioner, NSW Rural Fire Service



Fire Australia 2013 was formally opened by Mr Fitzsimmons, who was well placed to discuss the important theme of the event. Mr Fitzsimmons first joined the RFS in 1985 as a volunteer and became an employee in 1994. He has worked in the fire service ever since.

Mr Fitzsimmons's opening address first considered the meaning of professionalism in modern society, particularly with relevance to fire

protection and related professions. Importantly, he noted that professionalism often involved a transition from a rudimentary or basic understanding to a nuanced, highly skilled and knowledge-based grasp of one's craft or profession. He noted how this transition and the training that goes with it were a critical part of any individual endeavour in modern life.

Mr Fitzsimmons also spoke about the critical importance of accreditation, certification and formal training in relation to his experience with firefighting apparatus and appliances and the importance of this for front-line firefighters.

Keynote: Deen Sanders, CEO, Office of the Professional Standards Councils

In his presentation Mr Sanders set the scene on the process by which professional accreditation schemes were recognised in Australia via the Office of Professional Standards Councils.

Mr Sanders leads the work to promote



consumer protection and excellence in professional standards by encouraging the self-regulation of occupational associations through Cover of Excellence schemes.

Mr Sanders spoke of the nature of professions in Australia and examined the notion of having professions at all. He suggested that professions were about motivations for action that are beyond just remuneration. "Professionalism encompasses the idea that if we do things right the community will be safer. The important question is how do we improve the professions?" he said.

Mr Sanders also posed a strong



Scott Williams presents (L–R) the platinum sponsor award (Flamestop, above L); the best exhibit award (Brooks, above C); the exhibitors' choice award (Honeywell life safety, above R); and the editorial contribution award (received by Norm Winn on behalf of Barry Lee).

argument for the critical importance of real expertise as opposed to perceived understanding. "Assuming that all we have to do is apply pre-existing knowledge that is already out there (i.e. on the web) and we are expert is one of the greatest dangers of our modern age."

Mr Sanders noted that industry professionalisation did not mean there was a lack of existing professionalism, but rather sought to confirm or validate that professionalism against an independent benchmark.

**International guest speaker:
Don Bliss, Vice-President Field
Operations, National Fire Protection
Association (US)**



The National Fire Protection Association has more than 70,000 members worldwide and is the world's largest fire protection association.

Mr Bliss spoke about US residential fire problems. The US has one home structure fire every 85 seconds and one home fire death every 208 minutes. These issues have led to major reforms in the US, including mandatory residential smoke alarm requirements and mandatory residential fire sprinkler installation

requirements in new homes in some states. Interestingly, in many states where sprinklers are required there is little regulation of sprinkler installers, meaning that industry-led accreditation is vital.

Mr Bliss shared some of the highs and lows of the accreditation experience in the US, including the significant dedication of time and resources required for the process. He concluded that despite the challenges, accreditation for fire protection must continue to grow because "consumers are increasingly demanding to be sure that fire protection systems are installed properly".

**Keynote: Wilhelm Harnisch, CEO,
Master Builders Australia (MBA)**



Many attendees were interested to hear from Mr Harnisch, given his 22 years' experience at MBA, and he didn't disappoint.

Mr Harnisch opened by noting that "accreditation is a topic that never fails to polarise views", before elaborating on the building industry experience with accreditation.

In answering the Shakespeare-inspired question "To licence or not to licence", Mr Harnisch considered the risks and responsibilities of traditional licensed professionals, such as builders, plumbers, electricians, dentists and doctors, alongside fire protection professionals.

He spoke about how engaging such professionals was done with confidence of their competence, based on independent benchmarking. Mr Harnisch said the community now held these expectations for all trades.

He was very strong in his view that the industry must take control of its own destiny with regard to licensing and accreditation. "Licensing is infinitely preferable to heavy-handed regulation by government," he said.

Conference dinner

The conference charity dinner was a major highlight, featuring a fine dining menu, outstanding entertainment and inspiration provided by Australian Winter



Olympic speed skating gold medallist turned world-renowned motivational speaker Steven Bradbury (pictured).

Mr Bradbury delighted the audience with his tale of come-from-behind victory at the 2002 Winter Olympics in Salt Lake City and gave much good advice to guests as well as plenty of laughs. Guests were also treated to laid-back jazz and soul by the Rick Robertson Band.

The dinner raised \$8,000 for the Burns Unit at the Children's Hospital at Westmead. FPA Australia thanks all those who donated raffle items and gave generously on the night. FPA Australia

also thanks the conference dinner sponsor, Chubb, for its generous and valued support.

DAY 2: Thursday 21 November
The Fire Code Reform Centre
Revisited: discussion forum

A range of industry experts formed two panels for this innovative discussion forum, which was divided into two parts:

- ▶ What did we do right and what is left to do?
- ▶ The next generation: where to from here?

Both sessions featured robust discussion about the history of the Fire Code Reform Centre and the future of fire safety engineering in Australia. The idea for the forum was sparked by the passing of Claude Eaton, who was the Chief Engineer at AMP Society and the founding CEO of the original Fire Code Reform Centre.

After much discussion by all involved, the forum produced conference resolution number four, which considered the future of fire engineering and micro-economic reform in Australia. We look forward to working with all stakeholders to see progress on this resolution.

Keynote: Lindsay Walker, acting Executive Director, Building Codes Queensland



Mr Walker's role includes overseeing the recently implemented red-tape-reduction initiatives for homeowners and

the building and construction industry.

His presentation was particularly interesting in terms of the Queensland Government's experience with licensing and accreditation of the building professions and the government's views on professional recognition schemes. Mr Walker outlined the Queensland Government's experience with the Childers backpacker hostel fire disaster and the foundation of the Building Services Authority and corresponding licence classes that followed.

Mr Walker's presentation brought into sharp focus the devastating consequences that can occur when untrained or unskilled individuals undertake inspection, testing and maintenance of lifesaving fire protection systems and equipment. It also

highlighted the need for governments at all levels to act after tragic fire events, particularly when no industry-led licensing or recognition exists.

Keynote: Christopher Summers, Manager, Christopher Summers & Associates



It was fitting that Mr Summers delivered the last keynote presentation for the conference as he has had extensive

involvement in the development and roll-out of many professional recognition schemes over a long period, including assisting the NSW Building Professionals Board in accrediting building surveyors.

Mr Summers echoed the sentiment of Wilhelm Harnisch on day 1—that industry-driven accreditation was far preferable to government regulation. "A lot of times when (government) licensing comes into place, there is a tragedy that has occurred and government has decided it needs to do something about it. When this occurs licensing is generally put in at a very quick pace and often not all of the boxes are ticked."

Mr Summers also discussed the nature of professionalism, commenting that: "Professionalism does not simply mean that you have a university degree, it is the attitude you apply to your craft."

Exhibition and awards

The exhibition component of Fire Australia 2013 was the largest in the history of the event. To top this off, trade show attendees surpassed the previous record over the two days, meaning the exhibition hall was always vibrant and bustling. FPA Australia has received a lot of positive feedback from exhibitors, with many reporting highly valuable networking and lead generation.

As is tradition at Fire Australia, on the final day a small awards presentation was held to recognise outstanding exhibitors.

Brooks Australia took out the award for best exhibit. Brooks should be particularly proud of this accolade as it is its second consecutive win in this category. The exhibitors' choice award went to Honeywell Life Safety for its impressive interactive display.

FPA Australia CEO Scott Williams also presented the *Fire Australia* magazine editorial award to Past President, Honorary Life Member and long-time contributor Barry Lee OAM. Mr Lee has contributed to more than 50 published articles in

the magazine. Mr Lee was unable to attend the conference, so his award was accepted by friend and FPA Australia Honorary Life Member Norm Winn.

FPA Australia proudly congratulates Brooks, Honeywell Life Safety and Barry Lee on their awards.

Resolutions

In his closing address, Mr Williams announced the conference resolutions. FPA Australia thanks everyone who participated in the conference over the three days to help generate these important resolutions, which are all aligned with the conference theme.

Fire Australia 2013 represents a vital step towards bringing the resolutions to reality over the coming months and years.

- 1 The need for a nationally consistent, rigorous and fair accreditation system for the fire protection industry.
- 2 The need for increased harmonisation across all facets of the industry through consistent regulatory frameworks, standards and work practices.
- 3 The need for continual education and training within the fire protection industry, including ongoing upskilling and reskilling of the entire workforce.
- 4 The need for a shared vision and holistic pathway for national microeconomic reform to improve construction industry productivity through truly performance-based regulation, engineering and education of professionals.

Special thanks and Gold Coast 2015



FPA Australia thanks all sponsors of the Fire Australia 2013 Conference and Exhibition, in particular platinum sponsor Flamestop.

The association also acknowledges all of its valued conference sponsors: Alan Wilson Insurance Brokers, Exova Warringtonfire, Kidde, Chubb, Pertronic, Ampac and TBA Firefly.

The association thanks all speakers, delegates and everyone who attended across the two days for making the 2013 event the biggest and best Fire Australia to date. We look forward to doing it all again in March 2015 on Queensland's beautiful Gold Coast. More details will become available over coming months at www.fireaustralia.com.au. ■

BARRY LEE

Honouring a legend

A living legend of fire protection in Australia, Barry Lee OAM, was honoured at the 2013 Fire Australia conference charity dinner in a special address by master of ceremonies and adviser to the FPA Australia board, Peter Johnson, and board Senior Vice-President Chris Orr.

Sadly, both Mr Lee and his wife Loraine were unable to attend for health reasons, however, had they attended, the association was to present Mr Lee with a special framed portrait featuring some memorable moments in his 60-plus-year career.

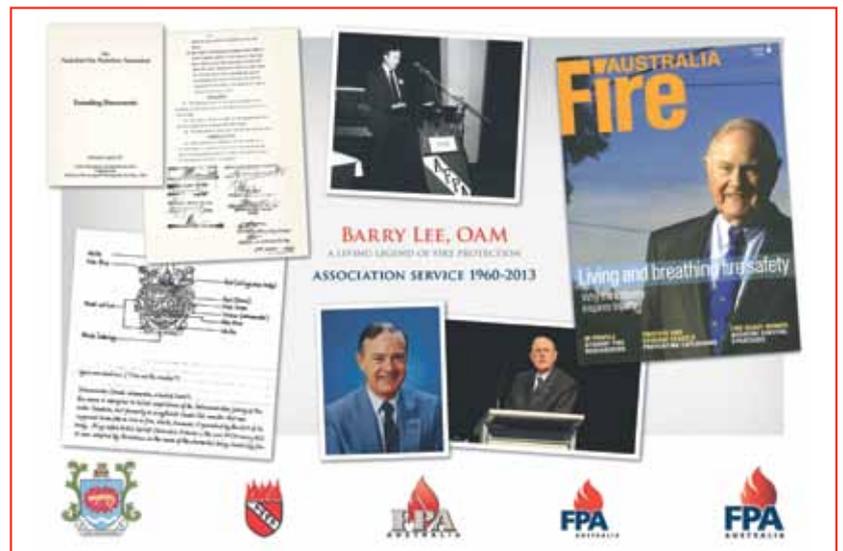
Mr Lee's involvement with the industry began "quite by accident" when, while studying mechanical engineering and working for an elevator company, he was assigned to investigate an interface problem at a company called Wormald.

He soon discovered Wormald "were into all sorts of interesting things beyond sprinkler systems, including what we now call special hazards systems".

Mr Lee's career with Wormald took him from Melbourne to Sydney and even to China in 1974. He has worked on some of the most complex and cutting-edge fire protection and special hazards systems in the world, including gaseous fire extinguishing systems on US Navy guided missile frigates and at a low-frequency radio station in the North West Cape of Western Australia, which was used to communicate with missile-carrying submarines during the Cold War.

As well as this groundbreaking and highly technical work, Mr Lee has always taken the time to contribute to his industry outside of his day-to-day activities. The list of industry groups he has been involved with is staggering and includes his roles as:

- Chairman, Standards Australia Fire Standards Coordination Group, and SA technical committees on automatic sprinklers and fire service pumps
- Member of Standards Australia Council, Standards Development Committee
- President, Fire Protection Industry Association of Australia (FPIAA)
- President, Australian Industrial Research Group
- President, The Institution of Fire Engineers, NSW branch
- Vice-President, Australia Vietnam Business Council.



Mr Lee was an original signatory for the development of the Australian Fire Protection Association, which merged with FPIAA in 1997 to become FPA Australia. He served as president of AFPA from 1991–93 and then as president of FPA Australia from 1997–98.

Despite his incomparable knowledge of fire protection and contribution to the industry, Mr Lee remains humble. When asked recently what he would like his legacy to be, Mr Lee said: "At Wormald I think I'll be remembered as the most senior fire engineer we ever had. We won't have that again because no longer do we have one person responsible for all technical facets throughout the business.

"The other thing is that, for the back-end of my career for the past almost-40 years, at the same time as I have been beavering away within the company, I was also working at Standards Australia. I've chaired many of the committees that we now have shadow groups (TACS) for at FPA Australia. I chaired them from the day they were founded, so I'll be remembered there as a guy who pulled his weight.

"When Harry Marryatt passed away he was regarded as Mr Fire Protection in Australia. I don't even aspire to that, but I would like to be remembered as a pretty competent fire protection bloke."

FPA Australia salutes the most competent fire protection bloke around and our friend, Mr Barry Lee OAM. ■



The RAAF bunker in 1964, which has been transformed into a training centre for WA DFES.

World War II bunker transformed into emergency services simulation training facility

The first phase of the transformation of the WA Department of Fire and Emergency Services Simulation Centre was completed on 6 December 2013.

By Mark Platt,
Simulation Centre
Manager, WA DFES

Formerly known as the Royal Australian Air Force (RAAF) Fighter Sector Headquarters (HQ), WA's first and only purpose-built bunker was constructed during World War II in Belmont, ten minutes from Perth's CBD.

The bunker was originally referred to as No. 6 Fighter Sector HQ Guildford, and was only used briefly for its intended purpose between March and August 1945 before being abandoned by the Commonwealth for nearly two decades.

In 1964 ownership was transferred from the Commonwealth to the state and since then the bunker has served as a centre for the various activities of the Civil Defence Service, now known as the State Emergency Service (SES). The facility was used as a SES training/meeting and regional emergency operations centre. Early in 2013, SES operations were transferred to the new Department of Fire and Emergency Services (DFES) Metro and State Operations Centres in Cockburn.

One of the key business components of the \$2.2 M Command Control and Coordination Incident System (C3IS) project is for DFES to be recognised as a leader in emergency management competency. To achieve this recognition, DFES is working towards establishing an emergency management incident simulation capability with statewide and DFES-designated hazards application located at the Belmont facility.

The first stage of redeveloping the bunker into a training simulation centre, now known as the WA Fire and Emergency Services simulation centre (SIMCEN) Belmont, has been completed. Given the historical significance of the building, the facility has

been listed as a state heritage site. DFES has had to work closely with the State Heritage Office during the redevelopment.

The first significant training in the new facility was undertaken in October 2013, when DFES successfully completed four State Operations Centre (SOC) team exercises. The exercises were designed to:

- 1 Bring together the newly formed and predetermined SOC teams.
- 2 Enable the SOC teams to practise and validate SOC decision-making processes, the recently developed WA Fire and Emergency Services Manual, standard operating procedures and the Australasian Inter-Service Incident Management System (AIIMS) 4 functional management.

The exercises were conducted within a realistic and challenging number of Level 2/3 bushfire incident scenarios occurring concurrently in WA. They also served as an opportunity to test the functionality of the SIMCEN for future exercise programs.

WA Fire and Emergency Services Commissioner Wayne Gregson said that DFES was fortunate to have such a facility. "Developing the bunker into a simulation training centre complements the heritage and historical aspects of the building, albeit we have only just completed the first stage of the SIMCEN development.

"It was originally constructed during the war to assist in the protection of the WA community. Now we will continue with this legacy as, once completed, it will become a state-of-the-art, large-scale incident emergency management training facility, designed to

The bunker served as a centre for the SES in the 1990s.



train our people to better prepare them for any type of emergency in the protection of the community of WA.

“The SIMCEN will offer a realistic, scenario-driven incident management environment within a discussion and operations-based training regime.”

Commissioner Gregson said emergency services personnel were often faced with situations that required rapid decisions and actions to save lives and protect property and the environment.

“If these decisions are incorrect or flawed, lives can be placed in danger, and personal property and critical infrastructure needlessly destroyed,” he said. “The ability to make rapid, accurate and safe decisions under pressure is one of the most critical skills for all emergency service personnel. In the past this skill has been developed mainly through attending real emergencies, incident reviews and textbook theory.

“Improvement in the capacity of emergency service personnel to manage major incidents at all levels will be enhanced through this dedicated training facility, with a consistent approach of assessment and evaluation of personnel in a simulated training exercise environment. It will reflect the level of preparedness, response and recovery component expected of the state’s pre-eminent emergency management agency by the WA community,” Commissioner Gregson said.

Some of DFES’s most experienced and dedicated emergency service personnel participated in the recent simulated training exercises. This provided several benefits, including ensuring personnel were best prepared for the forthcoming bushfire and cyclone seasons and generating valuable feedback on how the facility can best function into the future.

The SIMCEN has been established under the auspices of the DFES Professional Development Portfolio under the command of Assistant Commissioner Darren Klemm, who has responsibility for the management and training component at the facility. Assistant Commissioner Klemm said: “It has been said that experience can be a hard education, because it gives people the test before providing the lessons.

“Learning from mistakes at real incidents places the emergency responders and the public at risk. The modern risk profile is rapidly changing due to issues such as climate change and socio-economic factors and we can no longer rely upon experience to build competence.

“Relying on experience to develop command decision-making skills presents a number of challenges. Decision-makers and their staff are increasingly likely to be geographically distributed and composed of members from a range of different agencies. They need to be trained in a cost-effective manner, which makes the task of delivering consistent, high-quality training to emergency services personnel challenging. Nevertheless, it is still our responsibility to be able to respond to emergency incidents of any scale with a high level of preparedness. Furthermore, organisations need agile command-and-control frameworks that support a rising real-time flow of information and visualisation,” he said.

Assistant Commissioner Klemm said preparing emergency services personnel for future disasters and major incidents presented challenges in the provision

of a learning environment to replicate real-life scenarios.

“Having a dedicated facility like the SIMCEN provides for this by building capacity and improving our emergency management capability. Ultimately, by providing regular and consistent real-life exercises it gives DFES personnel the experience and skillset needed for whatever circumstance they may encounter without placing emergency responders or the public at risk,” he said.

Assistant Commissioner Klemm said the facility would provide consistent, high-quality, dynamic and regular training in a cost-effective manner. “SIMCEN will combine quality training methodologies, adult learning processes, emergency management experience and computer-supported simulation,” he said. “I envisage the facility to be utilised for training by other agencies or corporations with emergency management responsibilities and other agencies like the police and industry have already expressed an interest in this and I am convinced synergies like this will help build a safer WA.”

The second phase of the transformation will focus on the ongoing development and evolution of the SIMCEN with some minor works to improve its functionality. This will be linked to the latest technology designed as a next-generation web-based platform with training and support to operational capabilities for all hazard emergency management scenarios. This will contribute to DFES being recognised as a leader in emergency management capability. ■

SIMCEN in operation today. SIMCEN will improve the capacity of emergency services personnel to manage major incidents.



New edition of disaster handbook includes climate change adaptation

Handbook of disaster policies and institutions—improving emergency management and climate change adaptation

Professor John Handmer and Professor Stephen Dovers

by Mike Leonard,
Bushfire CRC

The early start to the 2013–14 bushfire season in NSW and super-typhoon Haiyan's devastation in the Philippines add weight to concerns that extreme weather events may become more common as the build-up of greenhouse gases warms the planet.

In October 2013 the Bushfire CRC hosted the launch of the second edition of the highly regarded *Handbook of disaster policies and institutions—improving emergency management and climate change adaptation*.

Authors John Handmer (Bushfire CRC Principal Scientific Adviser and Project Leader, and Professor and Director of the Centre for Risk and Community Safety at RMIT University) and Stephen Dovers (Bushfire CRC Project Leader and Director at The Fenner School of Environment and Society, Australian National University) have updated their 2007 publication to include wider coverage of climate change adaptation, which is now central to disaster and emergency planning and management.

The book makes the case that disasters, both natural and human-induced, are leading to spiralling costs in terms of human lives, lost livelihoods and damaged assets and businesses. Yet these consequences and the

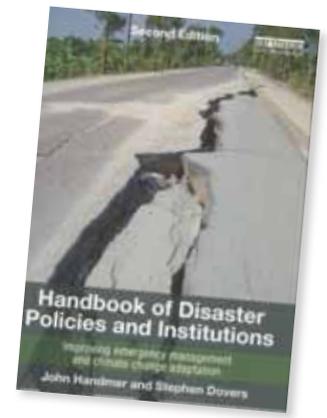
financial and human crises that follow catastrophes can often be traced to policies unsuited to the emerging scale of the problems and to the lack of institutional capacity to implement planning and prevention or to manage disasters. The book seeks to overcome this mismatch and to guide the development of a more strategic policy and institutional framework.

The authors build their case that the real heroes, as we head into an uncertain future, are the politicians and strategic planners who work to try to ensure that the institutional settings within which policies are formulated, developed, implemented and monitored are appropriate.

Emergency management, although clearly the necessary 'sharp end' of our societies' response to disasters, will inevitably be constrained or enabled by the policy and institutional settings.

This handbook is essential reading for practitioners across the world seeking to improve the quality, robustness and capacity of their disaster management mechanisms.

The handbook can be purchased at www.routledge.com. ■



An extract from *Handbook of disaster policies and institutions*

Disasters, even if not large, are usually treated to intense media coverage with the consequent need for political involvement, public sympathy, and search for responsibility. Following many major climate related disasters there is now speculation, and sometimes intense debate, about the contribution of climate change to the event. Whether this is the case for individual events is of little relevance to emergency managers when responding, as they do what they can regardless of the source of the event. The relevance comes when thinking about the future.

Disasters are almost always treated as 'events', with media interest moving quickly to the next issue. Those affected and those concerned about strategic planning, however, may find that the impacts and implications are long lasting and extend well beyond the apparently affected area. The aim of this book is to provide a framework to help shift the focus away from the event and towards longer-term thinking about the disaster process, including issues such as

vulnerability, resilience, preparedness and recovery, and changes needed to meet the challenges posed by global human and environmental change. Disasters and emergencies have many triggers other than climate of course, such as geophysical phenomena and technological failures. But the basic attributes of risk and emergency management are similar.

We might argue with the details of statistics indicating that the worldwide toll from disasters is escalating and debate the underlying causes; but there is no argument that the impact of

disasters on people's thinking and on the political agenda is much higher now than a few years ago. The Asian tsunami, Hurricane Katrina, heatwaves in Europe, infrastructure failures and destructive wildfires in Australia, the US, and Russia, transportation failures in China, Sweden and Indonesia, volcanic eruptions in Iceland and Chile, earthquakes in Pakistan and New Zealand, record breaking flooding in Australia, Europe and Asia, among many other events of every kind—and far more lesser known ones—remind us of the limits of prevention, and the political and human costs of inadequate disaster response and recovery planning. Most of all, we are becoming aware of a shortage of longer-term strategic thinking and policy.

There are about 80 million more human beings every year, and our societies and economies grow ever more complex and interdependent. The co-location of dense human settlements with potentially devastating natural and technological hazards suggests that we should expect more disasters, or at least more events that



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have the potential for disaster if not properly handled. The number of humans who exist in day-to-day survival mode, if not the proportion of the total population, appears to be increasing and is probably nearly half of all humanity—defined as those surviving on less than US\$2 a day (UNDP, 2006) or who live in the 60 or so countries currently directly affected by warfare or large scale violence. Such people have very limited capacity for disaster preparedness or recovery—their resources are inadequate for even their daily needs. This does not mean that people and their communities are not highly resourceful, but certainly their vulnerability to disruption is exacerbated.

Risk occupies a key position in policy debates, and risk analysis and management finds near universal use in decision-making across most areas of contemporary societies as part of regulatory, commercial and management processes. The social theorists Beck (1992) and Giddens (2000) go further and argue that modern society is better understood in terms of risk rather than, for example, class. Among other things, this acknowledges explicitly that most aspects of our lives are filled with uncertainty. However, almost every aspect of the risk concept is contested.

There are potential problems with risk-based disaster management. For example, risk assessments are usually based on historic data, which may limit their application to a future we know will be very different given rapid changes in society, economies and

The October 2013 bushfires in New South Wales once again brought the warming climate into the spotlight. The revised second edition includes new coverage of climate change adaptation, which has rapidly become central to disaster and emergency planning and management.



PHOTO: BUSHFIRE CRC

PHOTO: ISTOCK



Handmer and Dovers argue for the development of a framework to help shift the focus away from the event and towards longer-term thinking about the disaster process.

climate. Another issue is that much attention can go to the trivial but easily measured or conceptualised, while, paradoxically, the process may show that events that would have severe impacts, such as exotic animal diseases, import of food produced with particular chemicals, or escape of contaminants, have a small chance of occurrence and are therefore 'acceptable' or at least 'tolerable'. Acceptable risk is the 'residual' or remaining risk. In our context, 'acceptable' means that emergency managers, usually without consultation, will be responsible for dealing with the residual risk, effectively removing it from public debate. The implication is that acceptance of a risk, and the benefits that this may bring, is traded off (usually implicitly but sometimes explicitly) against sound emergency management. Unfortunately, the risk analysis and management process is often performed in a mechanistic, 'box ticking' fashion rather than through careful analysis—further undermining its utility.

What are the essential components of a 'disaster' or 'emergency', and what constitutes 'vulnerability'? The field, like all others, has its own jargon. Charles Fritz (1961, p655) was possibly the first to articulate a definition in the research and policy literature. Disasters are:

....uncontrollable events that are concentrated in time or space, in which a society ... undergoes severe danger and incurs such losses ... that the social structure is disrupted and the fulfilment of all or some of the essential functions ... is prevented.

Today, we may have to accept that disasters are not capable of precise definition, especially given that we increasingly recognise that disasters may be complex in their genesis and create unexpected additional disasters as they proceed. No matter what the arguments of intellectuals or policy-makers are, the global media, epitomized by CNN, is likely to be the ultimate definer of 'disaster'.

Disasters are subject to numerous definitions: to an investment bank, they mark an investment opportunity in the same genre as investing in shares; they may be adduced as evidence of climate change; they are research opportunities; and the livelihoods of many non-governmental organisations (NGOs) and professionals are built on them.

Agencies and statutes also set out their definitions, but to governments, disasters offer the opportunity to legitimise themselves, to parade their power by mobilising resources, and to empathise with the victims by offering sympathy and assistance. Seen like this, disasters are social, political or economic phenomena, not visitations by some force external to human control or as a result of calculated engineering risk.

Handbook of disaster policies and institutions—improving emergency management and climate change adaptation, chapter 1, pages 9–11.



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are you covered?

An ongoing issue for many fire protection companies is what types and levels of insurance they require. There are hundreds of policies available in Australia for business cover and the range and diversity of product offerings can be confusing, which can lead to gaps in coverage. In this article Alan Wilson takes us through four critically important insurance policy types to help you to make the right buying decisions.

By Alan Wilson,
Alan Wilson Insurance
Brokers

Public and products liability insurance

Public and products liability insures against legal liability for property damage and/or personal injury suffered by a third party person arising from the “acts or omissions of the insured” (whether due to negligence or otherwise). This insurance covers a wide range of risks and circumstances.

Although public and products liability is optional for any business, there is a potential for every business to be sued for negligence, economic loss, injury to others or damage to property. Even if you are not found legally liable, the legal costs in defending the case can be expensive.

Professional indemnity insurance

This insurance provides protection against any alleged breach of professional duty. It arises from any advice provided that is considered incorrect in some way and as a result of this alleged incorrect advice your client may lose financially. For a professional indemnity claim to proceed, you must have charged a professional fee for that advice.

There can be some grey areas between a public and products liability policy and a professional indemnity policy when it comes to claims, so it is recommended that you have both types of insurance in place. Depending on your occupation, your risk may not be great; the premium charged will reflect this.

Management liability insurance

This insurance protects a company, its directors and officers. It is one of the most important types of insurance that a business should have, but in my experience not many businesses have it. This insurance is divided into six sections.

- 1 Directors' and officers' cover.** This will protect past, present and future directors and officers plus anyone else involved in the management of a company for claims alleging a wrongful act and for which the company does not grant indemnification to such person.
- 2 Corporation entity cover.** Very relevant for companies that are owned by the directors by providing cover to the company for actions arising from managerial matters. A claim against the company will cause the same financial hardship to the owner, therefore this cover is extended to provide protection to the company.
- 3 Employment practices cover.** This provides cover to the company, directors, officers and employees for claims made by current, past and prospective employees over issues arising from employment practices, harassment, unfair dismissal and other employment issues.
- 4 Statutory cover.** This insurance covers directors and the company for fines and penalties from operating the business, including fines related to workers' compensation.
- 5 Crime cover.** Comprehensive crime coverage insures the company against dishonest acts such as theft and fraud by employees, including theft of stock. For example, a recent claim for \$17 M has just been identified in which a staff member issued false invoices over a period of five years.
- 6 Superannuation trustees' cover.** This provides cover against mismanagement of funds or when a breach of trustee responsibility occurs in a company-sponsored staff superannuation fund.



RANANCE

Tools of trade insurance

This covers tools and stock while they are being transported in your vehicle. It provides coverage for fire, perils, accidental damage and theft from a locked vehicle. It can also be extended for temporary storage in a building.

Items to think about

Insurance policies do not cover everything. They are not a maintenance policy and they contain clauses and conditions that make them a legally binding contract between the client and the insurance company.

Duty of disclosure

Under the law, you must tell the insurance company anything that may affect its decision to insure you. For example, if you have had claims or incidents in the past and you do not tell your new insurance company when renewing your insurance, then if you do have a claim the insurance company, at its discretion, can legally decline your claim.

Business description

The type of work you undertake has an effect on your insurance coverage and premium. You must disclose all the different types of work activities you undertake and if you change work activities during the year you must notify your insurer. This is important; an insurer has recently declined a \$5 M claim because it considered the work undertaken by the business had not been described properly when the insurance was initially taken out.

Not all business activities are covered

Do you undertake any work on or at a petrochemical plant, on boats or ships, at airports, or on mining sites above or below ground? If so, then your insurance may not cover you in the event of a claim. Coverage for work in any of these situations needs to be specifically arranged. Check with your insurance company if you undertake work at any of these sites. (Note: the FPA Australia Insurance Scheme automatically covers this area.)

Subcontractors

If you use subcontractors, they will require their own insurance coverage. At law, proportional liability applies, which means that all parties can be found partially liable in a loss and therefore each party, including the subcontractors, must have their own insurance.

If a subcontractor does not have their own insurance (and the correct insurance) and there is an incident, then you could be found liable for the total cost. However, your insurance will only pay for your portion of the liability, which will leave you exposed for the shortfall.

Contracts

Do you ever enter into written contracts with clients or organisations? If so, you need to look at the insurance terms and conditions carefully. A lot of contracts will place obligations on you that your insurance will not cover. ■

Global fire agencies join forces

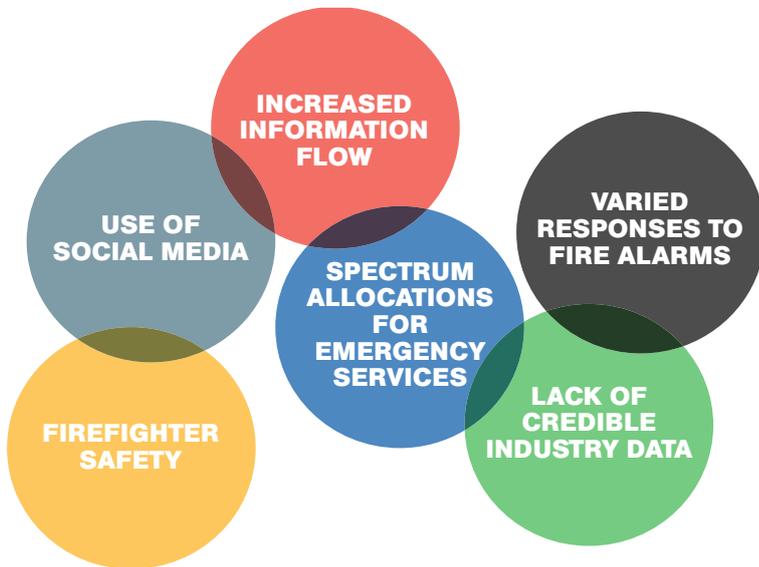


Figure 1 Recent trends in fire services globally.

AFAC CEO Stuart Ellis joined nine different organisations from around the world at the third annual Global Fire Service Leadership Alliance meeting in Brussels, Belgium, recently. Over three days in late October 2013, the meeting discussed global issues facing emergency responders and their communities. Countries represented included the UK, the US, Canada, South Africa, Europe and Australia.

The meeting was also an opportunity for senior leaders to maintain and develop networks, share experiences, identify successes, challenges, trends and future directions, and to leverage off other initiatives already in train elsewhere around the world. It provided AFAC with the opportunity to learn from agencies in other countries and to further strengthen its international relationships.

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World trends

There were several presentations and discussions around industry trends. Austerity was a clear feature; European and North American fire services have experienced expenditure cuts of up to 40% in recent years, with more planned for the future.

Other trends identified included a focus on firefighter safety; the use of social media—the increase in quantity and information flow; spectrum allocations for emergency services; response to fire alarms, which varies significantly globally; and a lack of credible industry data. It became evident that many services were moving away from being fire-centric to incorporate an ‘all-hazards’ approach in response to capability.

Specific challenges were identified in the US including: cost efficiencies (how to maximise the benefit to communities while minimising the charges); developing robust industry data models that can inform decision makers and clearly identify trends; dynamic staff models and their implication on performance and safety; developing cultures of diversity and inclusiveness; and becoming more attuned to political demands and expectations.

Two significant incidents were examined in detail: the freight train derailment in the Quebec (Canada) town of Lac-Mégantic in July 2013, which killed 47 people; and the Belgium gas line explosion at Ghislenghien in July 2004, which killed 24 people and injured 122. AFAC is hoping to bring these presentations to Australia in 2014.

Mr Ellis said: “Attending the Alliance meeting was an opportunity to learn and share experiences in a global context. It is clear that there are many common challenges for our industry and meeting globally provides the opportunity to benefit from the experience of others. As the peak body for the fire and emergency services in Australasia, that exposure at an international level is important to remaining current and aware of global developments.”

Continuing to forge strategic partnerships across the world with our industry peers is important for AFAC to build its capability and to keep abreast of issues internationally. ■



Representatives from across the globe at the Global Fire Service Leadership Alliance meeting in Brussels.

Back L–R: Tore Eriksson (CTIF); Chris Addiers (FBA); Russ Sanders (MCA); Mark Light (IAFC); Dino Padayachee (SAESI); Dieter Nuessler (FEU).

Front L–R: Paul Boissonneault (CAFC); Bill Metcalf (IAFC); Paul Fuller (CFOA); Stuart Ellis (AFAC).

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PHOTO: BUSHFIRE CRC

Research has been conducted to help measure erosion following bushfire.

Fire in the landscape—lessons learned

What has been learned about how fire affects water supply, carbon emissions and smoke?

By Adam Leavesley,
Fire Management
Officer, ACT Parks and
Conservation Service,
and
Nathan Maddock,
Bushfire CRC
Communications Officer

The Fire in the Landscape research theme of the Bushfire CRC was set up to address some of the key issues that land management agencies face in managing bushfires.

Featured in *Fire Australia* Autumn 2012, the four projects under the theme carried out by researchers at the University of Sydney and the University of Melbourne have significantly advanced the understanding of key aspects of fire, ecology and their complex interactions. The projects have investigated fire and water quality, how forests recover from fire, how different vegetation emits greenhouse gases, and the carbon emissions from different fires.

Bushfire CRC lead end user Neil Cooper, Manager of Fire Management at ACT Parks and Conservation Service, believes the suite of research will help land managers and the community.

“The ability to determine the fire-related effects of hydrology, erosion, carbon storage and carbon emissions will ensure our land can be managed better before and after fire, our water resources are preserved and maintained, and our air is fresh and clean,” Mr Cooper said.

“The application of the tools developed, and in development, by the Bushfire CRC researchers will help land managers better plan strategies for fire management and regeneration after a fire.”

The key findings of the four projects and how the research can be used are explained below.

Quantifying water quality risks following wildfire

This research, undertaken by the University of Melbourne’s Dr Gary Sheridan and Dr Petter Nyman, studied how the reduction of vegetation caused by bushfires can lead to significant soil erosion.

Erosion is worsened by increased fire severity, higher rainfall intensity and steeper slopes. It is also likely to be greater in areas of the landscape that are normally drier.

Dr Sheridan and Dr Nyman developed relationships that could underpin a model that predicts the distribution of erosion events in space and time. The model would be directly applicable to landscapes of the Great Dividing Range from Kilmore in Victoria to the boundary of the Sydney Basin. It could be used by planners to identify areas susceptible to erosion, help locate sediment control measures and help plan appropriate water supply and drainage infrastructure. The work may also be useful at a strategic level to inform water policy.

The key findings are likely to be applicable worldwide, but specific predictions will vary depending on geology and soil type. Users of the science could piggyback on the work done so far by partnering with the researchers to fine-tune the outputs for new areas.

Vegetation water use in mixed-species forests following fire

This project, into fires and hydrology, was carried out by Dr Tina Bell and Dr Tarryn Turnbull from the University of Sydney. It revealed that vegetation water use in mixed-species eucalypt forests (forests that are comprised of more than one species of eucalypt) did not increase markedly during the recovery phase following intense fire.

This is a significant finding, as it means it is unlikely that water yields from mixed-species catchments will be as strongly affected by fire as water yields from Ash-type forests (forests comprised of Ash-type eucalypts), where much previous research has

been conducted. A key difference between the mixed-species forests and the Ash-type forests is that the trees in mixed-species forests mostly resprout after fire, while the Ash-type forests are killed and regrow from seed.

The findings from this project can be used by catchment land planners and water supply authorities to find optimal strategies for simultaneously managing fire and ensuring water supply continuity. The results are directly applicable to the mixed-species catchments in south-east Australia.

Dr Bell and Dr Turnbull are finalising a tool, designed for land management agencies, that will greatly simplify the process of estimating vegetation water use.

Outside of south-east Australia, catchment managers may be able to build on this work and have the vegetation water use models validated for new ecosystems. The work may also be useful at a strategic level to inform water policy.

Greenhouse gas emissions from fires and their environmental effects

This research involved the development of a new laboratory method that can detect and measure a range of emissions from burning vegetation. Dr Bell and Dr Malcolm Possell, from the University of Sydney, determined greenhouse gas emission factors for a range of vegetation types.

Findings showed that vegetation containing more moisture produced less carbon dioxide and more carbon monoxide than drier vegetation, and that none of the gaseous components of bushfire smoke that were measured using the experimental setup were produced in toxic quantities. The study also showed that an introduced weed, African lovegrass, was much more flammable than the native Australian grasses.

The greenhouse gas emission factors can be used by Australian and international land management agencies to help manage carbon. The identification of variable flammability within Australian fuels is useful for fire managers in jurisdictions with African

lovegrass. Recognition of potential differences in flammability between co-located fuels introduces a new factor that may need to be accounted for in fire behaviour models.

The smoke toxicity tests were not exhaustive, so Australian fire managers and public health authorities will need to keep a watching brief on future research in this area. The differential emissions recorded from wet and dry fuels could provide a mechanism for Australian fire managers to manipulate the emissions from planned burns in the future.

Forest carbon management and bushfire emissions

This project found that carbon emissions from low-intensity prescribed burns in south-east Australia were much lower than carbon emissions from bushfires.

Dr Chris Weston and Dr Liubov Volkova, from the University of Melbourne, found that the calculation of carbon emissions based on fine fuel load significantly underestimated the total carbon emissions because of the contribution of coarse fuels to the total. A study in one location indicated that the combined carbon emissions from a prescribed burn and a bushfire (affecting the same area already burnt by the prescribed burn) were less than the carbon emissions from a bushfire in a comparative area long unburnt.

The work can be used by land managers in Australia's south-east to estimate their contribution to carbon emissions from planned burns in dry forests. The results may also provide a ballpark estimate of emissions from burning similar forests outside south-east Australia. The data could be used by the federal government in the national carbon inventory system, which will report on carbon emissions associated with land use. ■

For more information, including a Fire Note on each project, visit www.bushfirecrc.com/category/projectgroup/9-fire-landscape

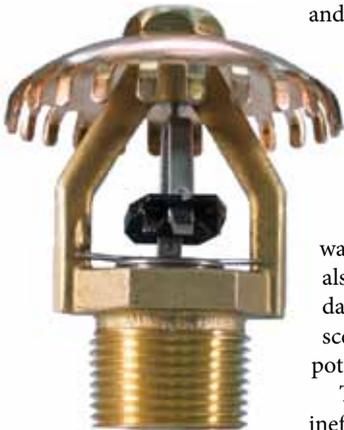
Dr Liubov Volkova measures carbon emissions from a prescribed burn.



CASE STUDY

State-of-the-art fire protection in the freezing cold

by Adam Hicks,
Territory Manager,
Vitaualic New Zealand



Victaulic FireLock LP-46.

New Zealand's Auckland International Airport is home to one of the largest cold storage facilities in the country. Leased by a global cold storage company, the warehouse is part of a global network and is operational 24/7.

The warehouse's fire protection was provided by a glycol (antifreeze) system, which Auckland Airport contracted Protech Design to review in June 2010. It was found that the glycol system presented serious safety concerns for the warehouse.

As there was no secondary trigger device, there was serious risk of accidental operation that could also result in possible freezing in the piping or damage to the piping or sprinklers. Any of these scenarios could prove disastrous for the leaser and potentially damage client relationships.

These risks, along with the high cost and inefficiency of glycol, caused Protech Design to consider other options. It found a more dependable solution for fire protection in such a harsh environment—a state-of-the-art pre-action system joined with installation-ready couplings.

Since this site had no secondary holding facility for backup during system installation, it was critical for the freezer to remain functional at its -21°C operational temperature throughout the construction phase to preserve existing warehouse stock. The situation demanded a prefabricated fire protection system that could be quickly and easily installed, ensuring that contractors and machinery were inside the cold facility for as brief time as possible.

Adam Hicks, New Zealand Territory Manager for Victaulic, said: "The cold and negotiating the already installed storage racks was challenging from a design and installation perspective. As the project was to be installed in a working freezer, the pipe needed to be hot dip galvanised post-fabrication for corrosion prevention—a very cost-effective method and building strategy."

Auckland Airport contracted Argus Fire System Service to remove the existing glycol system and install a roof-only, double interlocked, dry pipe, pre-action system. In order for the pre-action system to actuate, two or more fire detections would be required to let water into the pipes. If a single release event occurs, alarms will sound but the valve will not operate and water will not flow until a second release event is detected, therefore significantly reducing the chance of accidental water discharge and freezing in the pipes.

Accommodating business-as-usual in the facility meant that Argus Fire's staff had to work in an operating freezer at -21°C , creating serious health and safety concerns. To minimise risk as much as possible, strict guidelines were put in place to limit exposure time. Further complicating the process, the battery life

of installation tools and electric-powered platforms was drained exponentially faster because of the cold temperatures.

Mr Hicks said: "Argus Fire had to consider a huge number of restrictions when planning this project. Temperature, physical environment, cost and timing were all assessed and ultimately they chose products with proven efficiency and total installed costs."

Argus Fire sought innovative products that could reduce installation time in the freezer. The overall answer to this complicated task was found in a brand new pre-action system, joined with installation-ready couplings.

"The speed and ease of installation with this technology was a deciding factor," Mr Hick said. "The couplings come pre-assembled and eliminate the need to disassemble the coupling prior to installation. Couplings are simply pushed onto a grooved pipe end, joined by a second grooved pipe end and then bolts and nuts are tightened down—perfect for a project with such a challenging installation environment."

Multiple installation-ready technology couplings, including interlocked pre-action valves, proved to be the easiest, fastest and most economical method. To ensure dependable pneumatic detection, upright sprinklers specifically designed for storage spaces were chosen.

Rigid installation-ready couplings were selected as they significantly reduced the time spent in the cold and allowed the pipefitters to install them without removing their gloves. In addition, the specialty seal gaskets supplied with installation-ready couplings were perfectly suited for this application, helping provide a 'third hand' during installation.

Allan Matthews, Northern Regional Contracts Manager for Argus Fire, said: "We've done two successful projects with Victaulic. For the freezer install, we had to work in a live freezer at -21°C .



Auckland International Airport Victaulic fire protection products

- FireLock NXT preaction double interlocked pneumatic/electric series 769
- FireLock standard response, LP-46 low Pressure storage, upright, model V4603
- FireLock EZ style 009N rigid coupling
- FireLock style 005H rigid coupling
- Firelock fittings
- FireLock series 705 monitored butterfly valves
- FireLock automatic sprinklers

The installation-ready couplings provided us with a flush seal on the gasket as well as a quick install in the freezer itself.”

Upright sprinkler heads were a stand-out feature in the redesign, installation and certification of the Auckland facility. These are specifically designed for fire control in single, double and multiple row solid piled storage in a freezer up to the maximum roof height of 13.7 metres.

The low flow and low pressure requirements of this FM Global full-scale, fire-tested and approved solution also allowed Protech Design to reuse the existing fire pump and fire water supply tank at the facility, resulting in significant savings for Auckland Airport. The upright sprinkler head uses a standard response fusible element. As the ambient temperature rises to the rated temperature of the sprinkler head during a fire, the soldered fusible link melts, thus activating the sprinkler and clearing the waterway.

In a large cold storage facility such as this, where the threat of fire rapidly spreading has historically been high, the upright sprinkler head has a deflector that is specifically designed to spray the water in a pattern that will most effectively control growing storage fires.

Installing this type of system eliminated the need for in-rack pipes and sprinklers, ensuring more flexibility for storage and racking and maximum operational performance for the facility. A roof-only system also reduced the chances of a forklift damaging in-rack sprinklers and causing false activations. This type of system also made storage rack location flexibility possible for any future changes in layout.

The installation-ready technology pre-action system was the valve set of choice due to its speed of response, simplicity of operation and reduced footprint. The valve sets were delivered to the site in a specific configuration—fully pre-trimmed—allowing direct connection to the riser and requiring only minimal on-site work. ■



Victaulic FireLock
NXT pre-action
valve sets.



Victaulic Firelock EZ
rigid couplings.

Carbon dioxide —a unique fire extinguishant (Part Two)

By Barry Lee OAM



In Part One (*Fire Australia*, Spring 2013) Barry Lee discussed how carbon dioxide, long known as a fire extinguishant, became less used with the advent of commercial halocarbons. In Part Two, Barry describes carbon dioxide equipment, applications and safety issues arising from its use and storage.

Cylinder charging for extreme high and low temperature operation

Carbon dioxide portables and systems are normally designed to function properly from -20°C to $+50^{\circ}\text{C}$, unless otherwise marked. However, for extreme high and low temperature operation, such as installations on aircraft or service in Antarctic bases, they can be specially charged to operate from -54°C to $+71.1^{\circ}\text{C}$ by 'supercharging' with the addition of 200 psi (13 bar) dry nitrogen. Two purposes are accomplished by this procedure.

The addition of dry nitrogen to carbon dioxide cylinders provides additional pressure, which expels the carbon dioxide at cold temperatures (below -17.8°C) at a much higher rate than would the pressure of carbon dioxide itself. This is because nitrogen pressure does not drop as much as carbon dioxide pressure with decreasing temperature. Rate of discharge is important in extinguishing fires at any temperature.

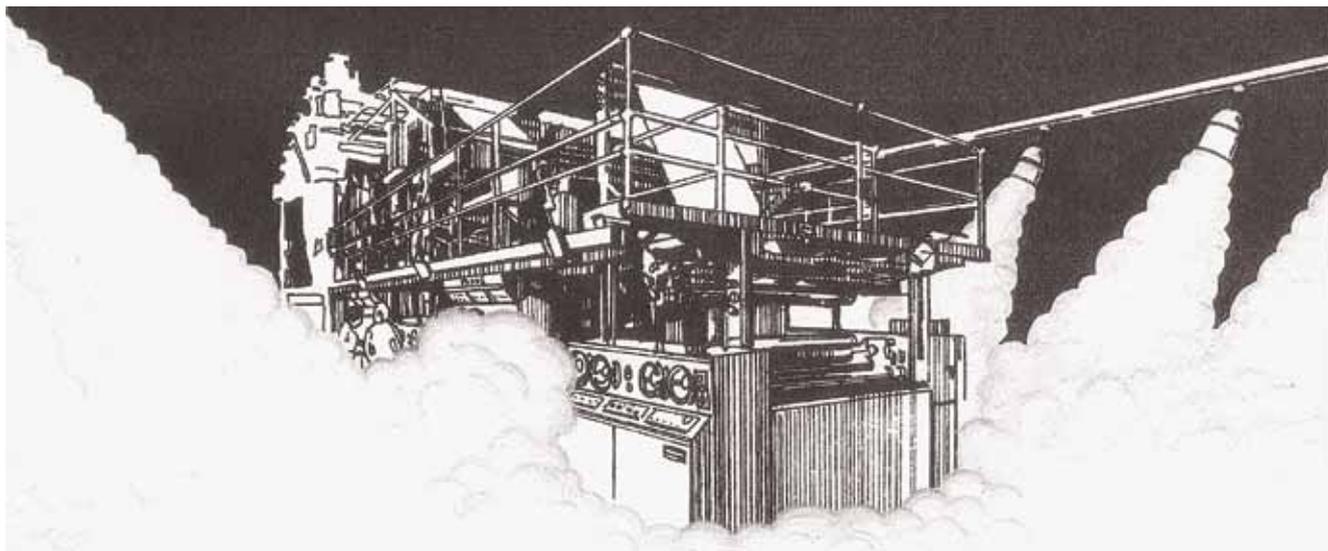
By decreasing the amount of carbon dioxide within the cylinder and adding nitrogen pressure, the total cylinder pressure is lower at high temperatures relative to any given pressure at sub-zero temperatures, because nitrogen pressure does not rise as much as carbon dioxide pressure with increases in temperature. Thus, the cylinder safety disc will not burst below 71.1°C and extinguishers will operate at high temperatures without danger of premature cylinder discharge.

Hydrostatic testing of high pressure carbon dioxide cylinders

Australian Standard AS 1851-2012, *Routine service of fire protection systems and equipment*, requires hydrostatic pressure testing of carbon dioxide cylinders that were last tested ten or more years ago. The question arises as to why hydrostatic stretch testing of carbon dioxide extinguisher cylinders is necessary.

Essentially, such testing is intended to minimise the possibility of cylinder failure by internal corrosion, external corrosion, rough handling, improper assembly of safety devices, manufacturing flaws and pressure cycling. Hydrostatic testing is a simple, non-destructive means of checking a cylinder's stability and strength after it has been in service for some time.

Hydrostatic stretch testing serves as one indicator of a cylinder's continued fitness for service. If the expansion of a cylinder were to be plotted against pressure, the curve derived would simulate the stress



Local application of carbon dioxide extinguishant.

curve obtained on a test bar. The test is therefore intended to ensure that the stress in the cylinder at test pressure does not exceed the straight portion of the stress strain curve; that is, it ensures the physical and metallurgical properties of the cylinder are such that it acts elastically up to the test pressure.

The theory underlying hydrostatic testing may be of interest. The ratio of permanent set to total expansion under pressure represents a minute deviation only from the straight line portion of the stress strain curve. The limit placed on the allowable permanent expansion is such that the deviation from the perfectly elastic portion of the stress strain curve corresponds to about 0.02% offset. It is extremely close to the elastic limit, and a great deal more yielding must take place before the stress would reach the conventional 0.2% offset yield point. The hydrostatic test can therefore be considered a sensitive test whereby 10% permanent expansion is attained at a very small deviation from perfect elasticity.

The test pressure and rejection limit applied to a given cylinder depends on the specification to which the cylinder is manufactured and the material used. Before each periodic test, the cylinder must be tare weight checked and thoroughly cleaned and examined externally and, insofar as is practicable, internally for surface defects, corrosion or foreign matter.

Where excessive internal rust or foreign matter is observed, the cylinder must be cleaned by such methods as wire brushing, shot blasting or rumberling, scraping, boiling or steaming. After cleaning and/or testing, cylinders must be thoroughly dried before refilling.

In summary, hydrostatic testing of carbon dioxide extinguisher cylinders, when performed by either of the methods prescribed by Standards Australia, provides simple, non-destructive assurance that such cylinders are fit for continued field service.

Quantity of carbon dioxide required

Total flooding systems

The nominal design concentration for Class A fires is 34% by volume multiplied by a volume factor that

relates to the volume of the protected space (from under four cubic metres to more than 1400 m³). Concentrations for Class B fires are generally greater than those required for Class A surface fires.

In these cases, the total quantity required is multiplied by a 'material conversion factor' (see, for example, NFPA 12, Standard on Carbon Dioxide Extinguishing Systems). Additional quantities are required for temperatures either above 93°C or below -18°C.

Openings in hazard enclosures must be minimised or arranged for automatic closure at time of system operation. Special 'screening' nozzles are sometimes employed on such openings. The retention or hold time is a minimum of 20 minutes.

Safety features such as lock-off devices, door interlocks and pre-discharge alarms may be required. In certain cases, where it is considered that carbon dioxide could leak or migrate to other areas, the gas may be distinctively odourised by, for example, the addition of oil of wintergreen (a mixture of methyl salicylate and methyl alcohol).

Local application systems

To quote NFPA 12: "Local application systems shall be used for the extinguishment of surface fires in flammable liquids, gases or shallow solids, where the hazard is not enclosed or where the enclosure does not conform to the requirements for total flooding." Such hazards include dip tanks, quench tanks, spray booths, rolling mills, printing presses and the like.

The quantity of carbon dioxide required is governed by nozzle performance characteristics and either the rate-by-area method (where the hazard consists primarily of flat surfaces) or the rate-by-volume method (where the hazard consists of three-dimensional irregular features that cannot easily be reduced to equivalent surface areas).

Local application relies on high rates of discharge. All of the liquid carbon dioxide stored in high pressure cylinders will not discharge within the design discharge period (30 seconds minimum) due to the refrigeration effect, and only the liquid portion of the



A carbon dioxide low pressure storage facility.

discharge is effective. As a result, local application systems generally require about 40% more carbon dioxide than total flooding systems.

Enclosed rotating electrical equipment

Special design requirements apply in the case of enclosed rotating electrical equipment; a minimum concentration of 30% must be maintained for the deceleration period (not less than 20 minutes). In practice, this necessitates an initial high rate discharge followed by a delayed (concentration-maintaining) discharge. Typically, the initial carbon dioxide discharge quantity will be not less than 0.45 kg per 0.28 m³ of enclosed volume up to 56.6 m³. For larger volumes, 0.45 kg per 0.34 m³ may apply.

As a US Department of the Interior study¹ dealing with protection of hydrogenerators explained:

Timely release of carbon dioxide to extinguish fires in large generators and motor enclosures is essential to minimise personnel hazard, equipment damage, and power outage periods. Most likely causes of fires are electrical faults that may not always be detectable at their inception. Unit-differential relays, split-phase differential relays and smoke detectors should initiate carbon dioxide discharge. In single-unit plants and when bus configurations permit selective tripping of units in multi-unit plants, fundamental frequency units of stator ground relays should initiate carbon dioxide discharge. The carbon dioxide discharge does not create debris which requires significant amounts of cleaning time.

On the protection of steam turbine-generators, a Westinghouse Electric Corporation report² noted that: *The use of carbon dioxide gas as a fire extinguishing agent is not harmful to electrical insulations. Provided a concentrated jet is not applied to hot rotor parts, a carbon dioxide system presents no hazard to excitation equipment. Warnings against*

personnel entering any enclosure filled with carbon dioxide and an enclosure ventilating procedure should be provided.

Potential electrostatic hazards

Gaseous carbon dioxide does not generate much electrostatic charge, but the sudden release of pressure when it is discharged from a cylinder results in a fall in temperature and particles of solid carbon dioxide snow are formed. These solid particles 'slide' down the inner surface of the extinguisher horn and both the horn and the carbon dioxide become electrically charged. Potentials up to 12 kV have been measured on nozzles.

Carbon dioxide gas is non-conductive, so static charges accumulate until in some cases there will be a spark to earth. The horn of a carbon dioxide extinguisher is made of non-conductive material to prevent electric shocks when fighting a fire near electrical apparatus. Static control is achieved by using the most effective material and contour for the extinguisher discharge horn, together with electrically conductive hoses (braided metallic wire, for example). All of this assures distribution of the generated electrostatic charges over the cylinder, hose and horn, thus increasing the capacity of the dielectric system to a minimum.

It should be noted that while the static discharge from a portable fire extinguisher can give an unpleasant sensation to the operator, it does not represent an extra hazard when used on a fire, since there is already a source of ignition present.

A more serious possibility concerns electrostatic hazards that may arise during carbon dioxide release in flammable atmospheres. The explosion in a kerosene storage tank in Bitburg, Germany, in 1954 and the explosion on the tanker *Alva Cape* in New York Harbour in 1966 were associated with the release of high pressure carbon dioxide for fire prevention purposes.

In the *Alva Cape* case, operations were underway to inert the cargo compartments (containing naphtha) below the lower explosive limit with carbon dioxide when the explosion occurred, killing four people. It is surmised that this was caused by static electricity generated by the carbon dioxide being discharged into the tank.

The Bitburg explosion and fire occurred during acceptance testing of a 120 x 30 kg high pressure carbon dioxide system designed to protect a 5,000 m³ underground jet fuel storage tank. Witnesses were standing on the tank roof. After one minute of system operation a tremendous explosion occurred, killing 29 and injuring nine others.

Some investigators suggested that one of the electric detector/actuator thermostats ignited flammable vapours being forced out of the tank by the in-rushing carbon dioxide. Others³ attributed the explosion to an electrostatic discharge from the carbon dioxide snow being released into the tank.

Whatever the facts, discharge of carbon dioxide into flammable liquid tanks requires strict precautions. Carbon dioxide distribution piping should be bonded and earthed not only to prevent the metalwork from becoming electrically charged (systems within

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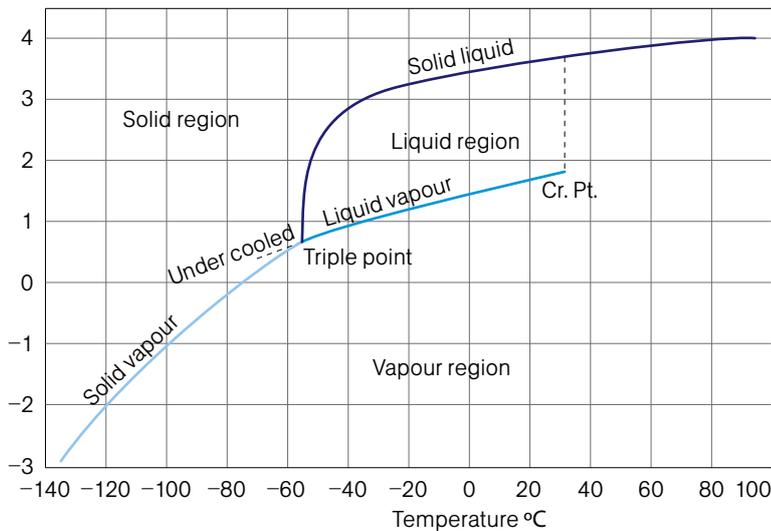
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Figure 1 Carbon dioxide properties.

Pressure Log. p Atmos.



electrical substations or switchrooms) but also to minimise the risk of electrostatic discharges.

Carbon dioxide flow in pipes and nozzles

As Williamson⁴ pointed out in 1959, there had long been an air of mystery about the flow of carbon dioxide through the distribution piping of carbon dioxide extinguishing systems. Unlike water, where friction loss can be realistically assumed to vary linearly with the equivalent length of the pipe and fittings, carbon dioxide boils when released into piping systems because it is stored as a liquid under its own vapour pressure.

As it boils it creates a mixture of liquid and vapour and pressure is reduced by friction. The specific volume of the two-phase fluid flow produces a non-linear pressure drop; greatest and increasing rapidly as the fluid approaches the end of the pipe. The delivery system must be designed to keep the pressure of flowing carbon dioxide well above the triple point pressure of 75 psia (517 kPa). If the pressure of the flowing carbon dioxide falls below the triple point pressure, dry ice will form in the pipe and possibly block orifices in the discharge nozzle(s). Because of these complexities, empirical methods were developed to calculate friction losses and nozzle orifice areas, sometimes requiring some redesign in the field.

In 1957, Hesson⁵ proposed a methodology for calculating the pressure drop for high pressure carbon dioxide flow in piping systems. This is reflected in current standards, including NFPA 12. In the late 1950s, a series of industry-sponsored tests demonstrated that Hesson's equations also worked reasonably well for low pressure systems. All of these calculations can now be performed via proprietary computer programs (see, for example, the German VdS Schadenverhütung program).

Not an ozone depleter

It is perhaps worth noting that one kilogram of liquid carbon dioxide, once expanded to atmospheric

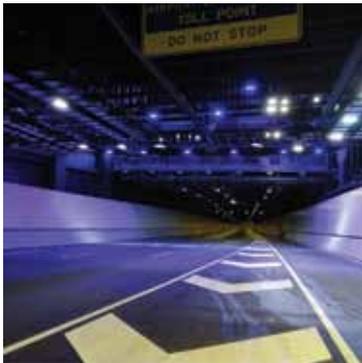
pressure, produces about 0.52 m³ of gas at 10°C. Carbon dioxide does not deplete the ozone layer and has a global warming potential of one. Although considered as a global warmer, the carbon dioxide in fire protection systems is taken as a waste byproduct or is drawn from the atmosphere, thus is not a net contributor.

As a closing point, it is worth quoting Wysocki⁶:
Carbon dioxide systems are a valuable tool in the fire protection engineer's arsenal, but they have their drawbacks, as do all tools. The major drawback is the fact that carbon dioxide in concentrations required for fire extinguishment will not support human life. In spite of this drawback, carbon dioxide systems have safely extinguished more fires than all other gaseous agents combined. With careful planning, judicious use of new technology and recurrent personnel training, carbon dioxide will continue to save lives and livelihoods for years to come. ■

Footnotes

- 1 Chadwick RW, Klataske LF and Osburn GD. *CO₂ Fire Protection Study for Hydrogenerators: Report of Findings*. Engineering and Research Center (US) Electrical Branch, Bureau of Reclamation, US Department of the Interior. February 1984.
- 2 *Steam turbine-generator information manual: Fire protection*. Westinghouse Electric Corporation, 1978.
- 3 Schon G. Arbeitsschutz, Fachteil des Bundesarbeitshaltes, 37, 1958.
- 4 Williamson HV. Carbon dioxide flows in pipes and nozzles. Paper presented to 63rd NFPA Annual Meeting, 1-5 June 1959, Atlantic City, New Jersey, US.
- 5 Hesson JC. *Flow of Two-Phase Carbon Dioxide through Orifices*. PhD thesis, Illinois Institute of Technology, 1957.
- 6 Wysocki TJ. *NFPA Fire Protection Handbook*. Volume II.

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Inspecting, testing and maintaining wet chemical kitchen fire suppression systems

Are you complying with the standards?

In Australia, wet chemical kitchen fire suppression systems are installed in accordance with manufacturers' manuals and AS 3772 *Pre-engineered fire protection systems for cooking equipment*. They are required to be tested to UL-300 or other equivalent standard and are listed under ActiveFire (www.activefire.gov.au) or another listing from recognised testing and approval bodies nominated by the Standard.

AS 3772 also includes maintenance requirements for these systems. Design, installation and maintenance is to be conducted by persons who hold competencies recognised by the Australian Qualifications Framework (AQF) or a state or territory licence.

However, we continue to see these systems being maintained by companies and individuals who have no qualifications or knowledge of the requirements to ensure that the system is maintained in accordance with its listing. This is despite the efforts of industry bodies, standards and manufacturers.

By Bob Griave,
Managing Director,
Delta Fire Australasia
Pty Ltd.

There are too many instances where systems have been installed where replacement parts for the system or systems have not been provided to maintain the requirements of its listing. There are also examples where systems that no longer meet the original design criteria (because of relocation of appliances and so on) have been subject to maintenance activities without these critical performance issues being identified or addressed. This typically results in the system being incapable of performing the task for which it was installed, and again, is not in accordance with its listing.

As the major installer and service provider of wet chemical systems in Australia, Delta Fire Australasia believes it has an obligation to inform and remind the fire industry of its “duty of care” when it comes to the inspection, testing and maintenance of wet chemical fire suppression systems. We need to ensure that when a wet chemical system is installed it is maintained in order to retain the integrity of the system and also that life and asset protection is assured as a result of expected system performance.

The maintenance of these systems is to be in accordance with Section 9 of AS 3772 and the particular manufacturer’s recommendations. Both AS 3772 and manufacturers’ manuals require that system components be replaced in accordance with the system’s listing, and that the system be installed and maintained by persons competent to do so. (AS 1851-2012 specifically notes that routine service requirements for pre-engineered systems protecting cooking equipment should be in accordance with AS 3772.)

Manufacturers of wet chemical systems invest a considerable amount of time and money testing these systems to ensure that, as products are improved, the systems retain their performance criteria and listing.

The preeminent system providers in Australia are Amerex and Ansul. Both run courses for their distributors to ensure that their knowledge and competency is up to date and to reinforce the manufacturers’ requirement that correct maintenance procedures are followed and that equipment notices regarding replacement and/or component updates are adhered to. AS 3772 also recognises the completion of manufacturers training programs towards demonstrating competency.

Some things you need to know about servicing wet chemical kitchen systems

- AS 3772 requires that the inspections identified in the standard are undertaken by a competent, trained service provider.
- Pneumatic fire detection tubing must be inspected six monthly, tested yearly and replaced at intervals not exceeding three years.
- The entire length of tubing must be replaced, either at the three-year interval or following a fire incident.
- If grease or coating build-up is excessive a more frequent replacement interval will be required. Excessive build-up is defined as when material completely encircles the tube or fusible link at any point along its length.

- Accumulator assembly must be replaced every five years from the date of installation, or more frequently if damage or corrosion is suspected.
- The pneumatic release module O-ring on brass actuation pistons must be replaced every six months.
- Mechanical release mechanisms should be lubricated and tested every six months.
- The agent cylinder and all hose assemblies must be hydrostatically tested at least every five years.
- All fusible links are to be replaced at intervals not to exceed six months.
- Nozzles and nozzle caps must be cleaned and/or replaced every six months.
- The correct nozzle types must be used.
- Nozzles must be secure and pointing in the correct direction.
- A functionality test of the system must be carried out every 12 months.
- An annual survey should be undertaken to ensure that system operation is not impaired.

In conclusion, wet chemical systems are exposed to extreme heat on a daily basis, so for the protection of life and assets it is up to us, the fire protection industry, to ensure that installed systems are maintained in accordance with the relevant standards and manufacturers’ requirements and to ensure that personnel whose job it is to maintain these systems are conversant with the system and are trained and competent to undertake such work. ■

Bob Grieve can be contacted on 1800 DELTAFIRE or via email at info@deltafire.com.au. Visit the Delta Fire website at www.deltafire.com.au.

Wet chemical kitchen fire suppression systems are found in commercial kitchens and must be inspected and maintained in accordance with AS 3772.



2013 FPA AUSTRALIA VIP DINNER – DARLING HARBOUR SYDNEY

Outstanding industry service recognised

The annual FPA Australia VIP Dinner was held at the stunning L'Aqua restaurant on Sydney's Darling Harbour the night before the start of the Fire Australia 2013 Conference & Exhibition.

By Joseph Keller,
Communications
Manager, FPA Australia

In the formal proceedings, each of FPA Australia's Platinum Members was recognised for their outstanding support of the association throughout 2013.

'Platinum' is the highest level of membership available within FPA Australia and is reserved for those companies and organisations that wish to take a highly active role in the fire protection industry and the association's activities. Because of this, Platinum Members are only approved based on direct application to the Board of Directors. The total number of Platinum Members is limited and strict criteria for acceptance apply.

FPA Australia 2013 Platinum Members are:

- Ampac Technologies
- Alan Wilson Insurance Brokers
- Brooks Australia
- Chubb Fire & Security
- Boss Fire
- Kidde Australia
- FlameStop Australia
- Tyco Fire Protection Products
- Verified
- Wormald.

Following the presentation of the Platinum awards, three important individual awards were presented.

The Ron Coffey Award

The Ron Coffey Award recognises outstanding academic excellence and the highest academic result in the Graduate Diploma of Bushfire Protection at the University of Western Sydney.

The recipient of the award was Mark Holland, Fire Prevention Team Leader, Country Fire Authority (CFA), Victoria. Mr Holland was presented with the award by Chris Orr, Senior Vice-President, FPA Australia.

Mr Holland started with the CFA in 2004, initially as a Project Officer in the State Coordination Centre. In 2006 he changed roles within the CFA into bushfire planning. He manages a team that has responsibilities including supporting CFA Regions, responding to statutory planning permit applications under the Bushfire Management Overlay, and liaising with Victoria's Department of Planning about the development and implementation of bushfire planning policy.

The 2009 Victorian Bushfires Royal Commission provided a unique opportunity to elevate the role of risk-based land-use planning. Victoria's planning system now clearly establishes life safety as the

primary objective when considering bushfire matters and obliges a precautionary approach to decision-making. Mr Holland is proud of the role he has played in establishing this system in Victoria and we were equally proud to honour him with this award.

The Meritorious Service Award

The Meritorious Service Award is awarded to members who have made a contribution to the association that is so significant that it requires special acknowledgement. It is awarded at the discretion of the board and is reserved for those individuals who have represented the association, either through technical advisory committees (TACs), special interest groups (SIGs), state committees or the board, over a long period in pursuit of the overall goals of the association.

The 2013 recipient is Vic Percival, Director, Lateral Fire Design. Mr Percival was presented with his award by Trevor Voevodin, National President, FPA Australia.

Mr Percival began his working life in fire protection in 1966 as a draftsman at Wormald's Perth office. At that time the largest single room protected by a gas system (CO₂) was being designed and installed at the US Naval Communications Base in North West Cape, WA. Mr Percival's work with gaseous fire protection continued from this point on. He became a Technical Officer with the Insurance Council in Melbourne in the mid-1970s before becoming involved in several large halon 1301 projects after returning to Perth in 1984. He holds a Certificate in Fire Engineering Management (equivalent to the current Certificate IV in Fire Technology) and is a member of the Institution of Fire Engineers Australia.

Since 1990, Mr Percival has run his own business, Lateral Fire Design, as a fire protection consultant and fire systems inspector. As halon's negative aspects were recognised, Mr Percival became involved in promoting halon alternatives with large clients, including BHP. His interest in this field continued upon his relocation to Melbourne in 1999 and in 2002 he was asked to join the Victorian EPA's Ozone Layer Protection Board.

When the EPA board was disbanded, he was asked by FPA Australia to join the current Fire Protection Industry (ODS & SGG) board and has continued his involvement to this day. Mr Percival has also had a long association with FPA Australia, serving on both the WA and Victorian state committees.

The A V Viscogliosi Award

The A V Viscogliosi Award for Fire Safety Excellence was established in 1996 in honour of the late Tony Viscogliosi by the then Fire Protection Industry



Chris Orr, Senior Vice-President, FPA Australia (R) presents the Ron Coffey Award to Mark J Holland, Fire Prevention Team Leader, Country Fire Authority (CFA), Victoria.



Trevor Voevodin, National President, FPA Australia (R) presents the Meritorious Service Award to Vic Percival, Director, Lateral Fire Design.



Shane Fitzsimmons, AFSM, Commissioner, NSW Rural Fire Service (R) presents the A V Viscogliosi Award to Graham Green, National Compliance Manager, Technical Services Group, Tyco Fire & Security Australia.

Association of Australia. The award recognises excellence and outstanding contribution to fire protection.

It is awarded to those individuals who have had a significant involvement in the technical work of FPA Australia and associated activities such as industry, government, and Australian and international standards. It is the most prestigious award presented by FPA Australia.

The recipient of the 2013 award is Graham Green, National Compliance Manager, Technical Services Group, Tyco Fire & Security Australia. Mr Green was presented with his award by Mr Shane Fitzsimmons AFSM, Commissioner, NSW Rural Fire Service.

Mr Green has worked tirelessly in the fire protection industry for more than 40 years. He has gained vast knowledge, both practical and theoretical, across the broad spectrum of fire protection systems/equipment testing and servicing. Today he is known as one of the foremost experts in these areas.

Mr Green has worked in a huge variety of roles, from a Sprinkler Tester and Emergency Service Fitter in the Sydney region in the 1970s, rising through the ranks as a Mechanical Testing Supervisor responsible for field operations, and then becoming Fire Systems Testing Manager for Wormald in 1997. In this role he managed the fire system and equipment routine test-and-inspect activities for fire sprinklers, pumps, hydrants, fire alarms, gaseous systems, emergency lighting, fire doors, kitchen systems, fire extinguishers and fire hose reels.

In 2000, Mr Green took on a new and challenging role as National Testing Auditor and was soon promoted to National Compliance Manager in 2003. Using his broad servicing experience in conjunction

with a strong knowledge of the Australian servicing standards, he was tasked with establishing national procedures and carrying out performance audits on the entire national fire system testing side of the Wormald business.

During all this time, Mr Green maintained an ongoing involvement with the practical implementation of Australian Standards for maintenance and servicing across all fire systems and equipment streams to ensure that strict discipline was maintained within the service businesses.

This role broadened his interest in and appreciation of supporting the wider fire industry to improve servicing compliance. Mr Green is the Deputy Chairman of FPA Australia's Technical Advisory Committee (TAC 1) for the routine servicing of fire protection systems and equipment and a long-standing member of FP-001 Standards Development Committee responsible for AS 1851. He is also a member of the FPA Australia Special Interest Group (SIG) for Inspectors/Certifiers.

As part of his standards development role, Mr Green was heavily involved in the massive task of rewriting AS 1851 into the new 2012 version. As a result of his hard work, along with the rest of the contributors, the new AS 1851 is significantly improved. FPA Australia actively promotes the use and adoption of AS 1851-2012 as the pre-eminent national servicing standard for our industry.

FPA Australia congratulates all award recipients for their valued support and service to the Australian fire protection industry. FPA Australia also congratulates each of its Platinum Members for their outstanding ongoing support, which makes the activities of the association possible. ■

CALENDAR OF EVENTS

Upcoming training workshops

Enrol now in the ideal qualification for fire protection professionals—FPA Australia's Certificate II in Fire Protection Inspection and Testing.

Choose from a range of subjects to study individually or enrol in the full qualification. Start your training at any time, when and where it suits you, with our self-study option, then undertake an assessment workshop with one of our qualified workplace assessors in your state or territory.

Workshops may run for one day or for a whole week, depending on your needs. Once your assessment has been completed you will receive a nationally recognised Statement of Attainment or Certificate as evidence of your competence.

Do you have skills and knowledge and simply require assessment?

FPA Australia offers several different options for assessment. Private workshops for group training and/or assessment can be arranged to suit the needs of your business, or you can enrol at any time and join other fire protection technicians at a public assessment workshop.

Call 1300 731 922 to arrange private assessment sessions or check the dates below for upcoming public workshops. If you are unable to attend one of the public workshops listed, call us on 1300 731 922 to find out when FPA Australia will be conducting a session near you.

Sydney

4–7 February 2014

18–21 March 2014

Perth

11–14 February 2014

4–7 March 2014

1–4 April 2014

Adelaide

18–21 February 2014

8–11 April 2014

Melbourne

24–28 March 2014

Brisbane

4–7 March 2014

Darwin

29 April–2 May 2014

HazMat 2014

14–15 May 2014

**Darebin Arts and Entertainment Centre
Preston, Victoria**

Theme: Achieving a productive and resilient industry: how workplace best practice can promote professional growth

HazMat 2014 will explore how your business or organisation can continue to expand and prosper in an uncertain economy. It will address the needs of workplace safety and incident prevention for long-term planning and stability. It will aim to achieve this through the presentation of case studies and incident analysis, as well as a focus on new and best practice methodologies.

Call for papers

The call for papers is now available for industry members and representatives to submit presentation abstracts for consideration for the conference program. Visit the HazMat webpage at www.fpa.com.au/events/hazmat to find out more.

Sponsorship and exhibition

To align your organisation or business with this key industry event you can take one of several high-exposure sponsorship options or purchase an exhibition booth for direct delegate contact. The exhibition and sponsorship brochure is now available from the exhibition page at www.fpa.com.au/events/hazmat/hazmat-expo.

For more information about HazMat 2014 visit www.fpa.com.au/hazmat or contact an events team member by calling 1300 731 922 or email events@fpa.com.au.

AFAC and Bushfire & Natural Hazards CRC Conference

2–5 September 2014

Theme: After disaster strikes—learning from adversity

Join us in 2014 for Australasia's largest and most important emergency services and public safety conference and trade exhibition, to be held at Shed 6 and TSB Bank Arena in Wellington, New Zealand.

Natural and man-made disasters strike all countries, and the Asia-Pacific region bears its fair share. Examining how emergency management services, land managers and communities prepare, respond to and assist with recovery is vital to developing evidence-based policy and practice for the future.

This conference will bring together and share the combined wisdom developed from experience, research and analysis across the industry to enable a deeper understanding of the approaches needed to cope successfully with disasters.

The call for abstracts is open. For further information visit www.afac.com.au/conference.

Bushfire CRC webinars

The Bushfire CRC launched a series of webinars in December 2013, featuring a selection of leading researchers. Aimed at fire and emergency service staff and volunteers, the webinars provide opportunities for knowledge sharing, and will support and encourage the adoption of Bushfire CRC research. Visit www.bushfirecrc.com to register for a webinar and for more information.

Upcoming webinars

Enhancement of weather predictions under extreme conditions - Dr Jeff Kepert
28 January 2014, noon AEDT

Human Behaviour and Decision Making - Prof Carmen Lawrence
3 February 2014, noon AEDT

For more events information:

FPA Australia: www.fpa.com.au/events or register via the FPA Australia CONNECT platform

AFAC: www.afac.com.au/events

Bushfire CRC: www.bushfirecrc.com/research/events_2014

Technical advisory groups and special interest groups

By Kevin Burns,
Technical
Administrator,
FPA Australia

TAC/1 Maintenance of fire protection systems and equipment

The Good Practice Guide on NSW Annual Fire Safety Statements is in its final stages. A joint TAC/1 and TAC/4/8/9 working group has been formed to develop the Good Practice Guide for fire hydrant testing.

TAC/2 Fire detection and alarm systems

TAC/2 continues to contribute to FP-002 projects. The TAC has also been discussing how the roll-out of the National Broadband Network (NBN) may affect fire alarm monitoring.

TAC/3/7 Portable and mobile equipment

Work on the Information Bulletin on extinguisher cylinder date (MM/YY) stamping continues, while a new Information Bulletin has been drafted on the safe handling of portable fire extinguishers during service. TAC/3/7 has also earmarked a project for next year to develop a Good Practice Guide for extinguisher certification.

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

TAC/4/8/9 continues to work on the Technical Advisory Note on the demarcation point between the water supply and the fire system in an AS 2118.1 compliant sprinkler system.

TAC/11/22 Special hazards fire protection systems

The Reference Document on gaseous fire suppression system actuators is nearing publication, as is the ozone depleting substance and synthetic greenhouse gas (ODS & SGG) Good Practice Guide, which is to be published by the Fire Protection Industry (ODS & SGG) Board. The guide will replace the current ODS & SGG code of practice.

TAC/17 Emergency planning

The publication of the Information Bulletin on evacuation diagrams has been placed on hold until amendment 1 to AS 3745 is published and the Information Bulletin can be updated accordingly. TAC/17 continues to work on a document based on NFPA's emergency evacuation planning guide for people with disabilities.

TAC/18 Fire safety TAC/19 Passive fire protection

The Good Practice Guide on the installation and maintenance of intumescent fire dampers is now ready for review and endorsement by TAC/18 and TAC/19. Work on the Good Practice Guide on smoke barriers continues.

TAC/20 Bushfire safety

The Technical Advisory Note on requirements for draught excluders in buildings constructed in bushfire-prone areas is nearing publication. A Technical Advisory Note on sarking has been drafted and supplied to the technical department to put into template and circulate to TAC/20 for review. ■



Standards Australia

By Kevin Burns,
Technical
Administrator,
FPA Australia

FP-002 Fire detection and alarm systems

Public comment on the revision of the smoke alarm standard (AS 3786) was reviewed at a meeting of FP-002 in October. At this meeting it was also agreed to progress the adoption of ISO 7240-16 to public-comment stage. Work continues on the revision of 1670.1.

FP-004 Automatic fire sprinkler installations

Work continues on the revision of AS 2118 .1 *Automatic fire sprinkler systems—general systems*.

FP-008 Fire pumps and tanks

The revision of AS 2941 *Fixed fire protection installations—pumpset systems* was published on 18 November 2013.

FP-009 Fire hydrant installations

The revision of AS 2419.1 *Fire hydrant installations—system design, installation and commissioning* is nearing release for public comment.

FP-011 Special hazards systems

Work on the revision of AS 14520 (which is to be produced as AS 4214) continues.

FP-017 Emergency management procedures

FP-017 has reviewed the public comment received on the draft amendment 1 to AS 3745-2010 *Planning for emergencies in facilities*.

FP-018 Fire safety

FP-018 has held a meeting to review the public comment on the revision of AS 1530.4 *Methods for fire tests on building materials, components and structures—fire-resistance test of elements of construction*. FP-018 has also been working on a new standard—AS 5637 *Determination of group numbers for wall and ceiling linings*.

FP-019 Passive fire protection

Work continues on the revision of AS 1905.1 *Components for the protection of openings in fire-resistant walls—fire-resistant doorsets*.



AUSTRALIA
Fire

For more details on submitting a contribution or to advertise in *Fire Australia*, please contact the editor:

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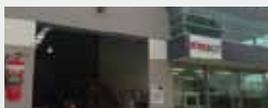
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PTFE is often better known by the more common brand name, Teflon®, which is a registered trademark of DuPont. The new ENT coating is applied using a non-electric, auto-catalytic process that maximizes the coating's durability and anti-adhesion properties. The sprinklers are thoroughly coated including the water way, screw, and pip cap. The result is a sprinkler that will show little to no evidence of corrosion during its lifetime in a corrosive environment.

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