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MEETING THE CHALLENGE

BY
DR RICHARD THORNTON

Chief Executive Officer,
Bushfire and Natural
Hazards CRC



Two years completed now, and the Bushfire and Natural Hazards CRC is ensuring that research is on track to meet the priorities of the fire, emergency service and land management sectors. This is the valuable feedback the CRC is receiving from our partners, which include members of AFAC and FPA Australia.

As the national research centre for fire and natural hazards we cannot lose sight of the importance of this goal. It is a lot more than simply undertaking research; the science underpins the

future strategies and operations of all our partners. (See how we have helped the NSW Rural Fire Service in 'Planning to make a difference in NSW', page 40.) Partner input into the direction of the research is critical, and the connectedness that exists and continues to evolve between practitioners and our scientists is fantastic, as seen at our joint annual conference with AFAC (see page 16). We would not be where we are today without it.

People from around the world are looking at how we do things and are envious of the success we have had in building these relationships. The CRC has a broad-based, dedicated team of more than 200 people all working on a common cause—a safer Australia and New Zealand.

But we can not stand still, and we need to keep looking to the future. With this in mind, we have begun a process to refresh our research program, with the plan to continue successful current projects and commence new projects of vital need to ensure the greatest value is derived from the investments in the CRC.

This issue of *Fire Australia* highlights just some of the latest developments, and the magazine looks a bit different too. We hope you enjoy the fresh approach.

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OUR COVER

The sun sets over a fireground in the Northern Territory.
PHOTO: BILL MCLEOD, BUSHFIRES NT.

ABOUT FIRE AUSTRALIA

Fire Australia is a joint publication of Fire Protection Association Australia, the Australasian Fire and Emergency Service Authorities Council and the Bushfire and Natural Hazards CRC. We aim to bring the latest news, developments and technical information to the fire protection industry, emergency services and natural hazards research organisations. *Fire Australia* is produced quarterly and distributed throughout Australia and New Zealand. Editorial submissions are welcome and can be sent to: joseph.keller@fpaa.com.au.

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

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Fire Australia magazine is printed by a printer with ISO14001 Environmental Management System Accreditation using vegetable-based inks onto FSC-certified paper.

ISSN 1032-6529 (Print)
ISSN 2200-9221 (Online)



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LEARNINGS FROM LACROSSE FIRE SHARED NATIONALLY

As part of AFAC's commitment to raising the national capability of fire and emergency services, the annual *Knowledge Event Series* again took place around the country. This year's event focused on the challenges of multi-storey high-rise residential fires and was developed in response to the November 2014 Lacrosse building fire in Melbourne's Docklands precinct, which saw around 400 residents evacuated to nearby Etihad Stadium.

The seminar, supported by Motorola Solutions, featured presentations from Deputy Chief Officer David Youssef and Acting Assistant Chief Fire Officer Mark Carter of the Metropolitan Fire and Emergency Services Board, Victoria

(MFB). Chief Officer Youssef and Acting Assistant Chief Fire Officer Carter outlined the challenges and implications from operational, built environment and community safety perspectives.

Throughout May and June 2015, the series took place in seven cities (Melbourne, Sydney, Brisbane, Hobart, Perth, Adelaide and Darwin) and was attended by more than 560 delegates. The event raised several issues for ongoing consideration, from operations to building materials and associated building standards, to overcrowding of apartments.

Risks to responders, evacuation management, building materials and the challenges of coordinating a multi-agency event will be on the agenda

for further discussion at upcoming meetings to determine how these issues can be further explored at a national level.

The issue of combustible building materials that fail to adhere to Australian building standards is being examined under a Senate inquiry, announced by Senator Nick Xenophon in June. The Senate Standing Committee on Economics is due to report back in December 2015. Additionally, the MFB requested the Coroner to conduct an investigation and has posted a report of the incident on its website at www.mfb.vic.gov.au. ■

We hope you are enjoying the refreshed look of *Fire Australia* magazine. In order to ensure the publication stays contemporary and modern some design elements have been updated from this edition onwards. We trust you continue to enjoy the new-look magazine!

PHOTO: METROPOLITAN FIRE AND EMERGENCY SERVICES BOARD, VICTORIA.



Fire damage on the south wall balcony of apartment 805 of the Lacrosse building.

ABOUT MOTOROLA SOLUTIONS

Motorola Solutions is a leading provider of mission-critical communication products and services for public safety, government and enterprise customers. Through cutting-edge innovation and communications technology, Motorola Solutions enables its customers to be their best in the moments that matter. Motorola Solutions is a worldwide leader in nearly all of the markets it serves, with a highly diversified customer base, operations in more than 65 countries and an unmatched portfolio of innovative technology offerings. Motorola Solutions meets a wide range of customer needs through its public safety solutions, mobile computing technology, data capture, integrated command and control communications, WLAN solutions and life cycle approach to services.



Motorola Solutions—partnering with AFAC to bring knowledge to the emergency services

PHOTO: SANDRA WHIGHT



Sandra Whight of TFS was awarded for her project on fuel reduction burning.

LAURIE LAVELLE AWARD RECIPIENTS ANNOUNCED

The highly esteemed Laurie Lavelle Award was presented at the AFAC and Bushfire & Natural Hazards CRC conference in acknowledgement of significant contributions to improving the knowledge, skills, operations, performance or public profile of the emergency services sector.

Two initiatives were recognised as being worthy of acknowledgment. The first award was given jointly to Stephanie King and Emma Dryburgh of Emergency Management Australia—Attorney-General’s Department, and Jillian Edwards of AFAC. The recipients

were awarded for their shared role in developing the nation’s first ever capability statement, the *2015 National Statement of Capability for Fire and Emergency Services*.

All three worked tirelessly to scope the development of a complex database, aggregate it into meaningful intelligence, produce a quality product with accurate information and develop briefs for senior executive and ministerial levels.

The second award was given to Sandra Whight of the Tasmanian Fire Service in recognition of her

outstanding leadership in building a cooperative, science-based and tenure-blind approach to managing bushfire risk in Tasmania. Over the past 12 months, Ms Whight has led the development of an innovative bushfire risk analysis for the whole of Tasmania, and has been responsible for the day-to-day establishment and implementation of the new *Fuel Reduction Program*.

Laurie Lavelle presented both awards during the conference welcome and awards ceremony in Adelaide. Congratulations to all of the winners. ■

INNOVATION ON SHOW AT AFAC15

For the sixth year Motorola Solutions has partnered with AFAC to present the Motorola Solutions Knowledge Innovation Awards at the annual AFAC and Bushfire & Natural Hazards CRC conference. The awards, which are presented in two categories—individual and agency—are given in recognition of innovation, creativity and contribution to the advancement of knowledge management across the industry over the past 12 months.

The 2015 agency award was granted to Fire & Rescue NSW in acknowledgement of the development of *Mosaic*—an innovative product that combines fire injury risk data with

lifestyle profile datasets to identify the community members considered at greater risk of fire, right down to the individual household.

Mosaic classifies all Australian households into 49 profile types and 13 broad groups, using census data and other variables. This knowledge-led targeted approach has allowed fire stations to better engage with the community and identify and visit those residences in their station area that are considered most ‘at risk’ from fire.

The 2015 individual award was received by Bill Gleeson of the Northern Territory Fire and Rescue Service (NTFRS) in appreciation of his

outstanding commitment to developing a Station Management System for the agency. The system provides invaluable reporting for NTFRS and is used daily by operational staff.

The introduction of this system has also given smaller fire services a relatively inexpensive solution to capturing operational data on activities such as training, community safety and building inspections.

Steve Crutchfield, Managing Director of Motorola Solutions Australia and New Zealand, presented the awards at the conference welcome and awards ceremony in Adelaide in early September. Congratulations to all of the winners. ■

AFAC16 PART OF GLOBAL INTERSCHUTZ FAMILY

AFAC and Hannover Fairs Australia are delighted to announce a new partnership that will bring the latest emergency services equipment and technology from around the globe to the Australasian region.

Hannover Fairs Australia began operations in 2002 and is a subsidiary of Deutsche Messe, the organiser of the world-leading exhibition for firefighting, fire protection and rescue—INTERSCHUTZ.

From 2016, the AFAC and Bushfire & Natural Hazards CRC annual conference will reflect this partnership. The conference to be held in Brisbane

from 30 August to 1 September next year will be called AFAC16 *powered by INTERSCHUTZ*. This partnership positions AFAC16 as part of the global INTERSCHUTZ family, with other events staged in Italy and Poland, as well as the hugely successful INTERSCHUTZ conference in Hannover, Germany.

“We are excited by the opportunity that this partnership with Hannover Fairs Australia presents for AFAC members across Australia and New Zealand,” said Stuart Ellis, AFAC CEO. “We believe that partnering the successful AFAC conference with INTERSCHUTZ will bring

great benefits to the fire and emergency services industry in Australasia, including the further strengthening of global partnerships and the opportunity to share knowledge about the latest equipment and to further enhance public safety.”

AFAC16 *powered by INTERSCHUTZ* acknowledges the international nature of the global market for fire, rescue and emergency response and provides further opportunities for delegates and exhibitors to engage with an international audience, bringing the latest technology and equipment from across the world to our region. ■



AFAC and Hannover Fairs Australia sign a new partnership to deliver AFAC16 *powered by INTERSCHUTZ*.

MAJOR AWARD FOR CRC RESEARCHER

Bushfire and Natural Hazards CRC researcher Dr Katharine Haynes from Risk Frontiers at Macquarie University was selected as the Australian nomination for the prestigious APEC Science Prize for Innovation, Research and Education (ASPIRE) for 2015, beating a strong field of applicants from across the country.

This year was the first that Australia has run a national competition to select a nominee for the APEC-wide prize. While Dr Haynes did not take out the international award, she was the only social scientist nominated at the international level.

“I was thrilled to be selected to represent Australia,” said Dr Haynes.

“It is great that research on the human and policy dimensions of disaster risk reduction and climate change adaptation was recognised. There are many excellent researchers doing similar work across Australia and the Bushfire and Natural Hazards CRC is a great supporter of much of this research.”

The CEO of the Bushfire and Natural Hazards CRC, Dr Richard Thornton, said that Dr Haynes was a worthy representative for Australia.

“Dr Haynes’ research has led to a number of direct policy outcomes to improve disaster management for extreme events and climate variability. It was fantastic for both her, and the



[L-R] Dr Katharine Haynes receives her award from the Hon Karen Andrews MP.

CRC, that she was selected to represent Australia.”

Dr Haynes was recognised for her work in community and youth-based disaster risk reduction and communication, and for using science to improve policies and organisational procedures.

ASPIRE is an annual award valued at US\$25,000. It recognises young scientists from APEC economies who have demonstrated a commitment to both excellence in scientific research and cooperation with scientists from other APEC member economies. ■



An ebook based on the PhD work of Dr Briony Towers has been highlighted by the UN as best practice.

CRC SCIENCE IS BEST PRACTICE

CRC science has been highlighted by the United Nations in a new publication detailing case studies on using science for disaster risk reduction.

Following the third UN World Conference on Disaster Risk Reduction in Sendai, Japan, in March, the UN published a series of case studies titled Using Science For Disaster Risk

Reduction. The document includes 10 case studies on best practice, with work by the Bushfire and Natural Hazards CRC's Dr Briony Towers featured. The case study describes outcomes from the PhD research of Dr Towers, which was completed through the Bushfire CRC. The research has been widely used, including informing an animated

television bushfire safety campaign targeted at primary school children. The research was also used in the development of a bushfire preparedness scenario for an online safety game for children, a companion resource for the game for school teachers and an ebook aimed at helping parents talk to their children about bushfire preparation. ■

CONTAINERS STACK UP FOR TRAINING

Queensland firefighters are now prepared to tackle dangerous and hazardous situations thanks to a new state-of-the-art training centre in Townsville constructed from shipping containers.

Australasia's largest shipping container provider, Royal Wolf, has transformed six containers for the Woodlands Fire Training Facility to create a unique unit that will increase firefighter capacity for rescue during an incident. The facility consists of three 40-foot (about 12 m) and two 20-foot (about 6 m) containers stacked three high and fitted with stairs, safety rails, windows, shutters and bollards to form a multi-functional training resource.

Firefighters are put through their paces and experience confined space training in the dark, with container interiors painted black. Firefighters also undertake abseiling exercises off the top of the structure from a specially designed platform.

QUEEN'S BIRTHDAY HONOURS

Bushfire and Natural Hazards CRC researcher Associate Professor Kevin Tolhurst of the University of Melbourne and AFAC staff member Sandra Lunardi have been recognised for their achievements in the 2015 Queen's Birthday Honours list.

Dr Tolhurst received a Member of the Order of Australia (AM) award, recognising his significant service to science through land and bushfire management, and to the community through providing expert advice at fire emergencies.

Ms Lunardi was awarded an Order of Australia Medal (OAM) for her service to the community through fire and emergency service organisations.

The Bushfire & Natural Hazards CRC and AFAC recognise Dr Tolhurst's and Ms Lunardi's major achievements to the Australian community and congratulate them both on their well-deserved awards. ■

Sandra Lunardi, AFAC, accepts her Order of Australia Medal.



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STUDENT RECOGNISED WITH INTERNATIONAL SCHOLARSHIP

Bushfire and Natural Hazards CRC PhD student Mr Billy Haworth has been awarded a prestigious scholarship by the International Association of Wildland Fire (IAWF).

Mr Haworth was chosen as the scholarship winner by a panel of international fire science experts and is the only recipient at the doctoral level for 2015.

"It's not an easy task undertaking a PhD so any opportunity for support is highly valued," said Mr Haworth.

"For my research to have the support and recognition of the International Association of Wildland Fire, such a well-respected organisation in the field of fire research, really is awesome," he said.

"The IAWF scholarship will greatly benefit my research by enabling vital additional fieldwork and data collection and facilitating further opportunities to discuss my research with relevant stakeholders in the fire community, critical for ensuring policy relevance of my work." ■



PHOTO: BILLY HAWORTH



CRC board members with book authors Jeremy Russell-Smith, Andrew Edwards and Northern Territory Independent MP Gerry Wood.

BOOK EXPLORES A NEW NORTHERN FIRE INDUSTRY

The potential for using bushfire as a management tool to reduce northern Australia's carbon footprint shows how science can support the development of new industries in northern Australia.

In launching the important new book *Carbon accounting and savanna fire management* at Charles Darwin University, the CEO of the Bushfire and Natural Hazards CRC, Dr Richard Thornton, said that science is integral to investment across the top of the country.

"The emissions of greenhouse gases from extensive late dry season fires in northern Australia have been a problem for many years, as has the associated dramatic decline in biodiversity in hotspots such as the Arnhem Land plateau," Dr Thornton said.

"Far-sighted research investments by the Tropical Savannas CRC, the Bushfire CRC and now the Bushfire and Natural Hazards CRC, in the north of Australia have now seen a whole new industry develop across the vast reaches of northern Australia. This industry sees landholders, Indigenous communities and pastoralists managing fire and dramatically shifting the season of fire to the early dry season, rather than the hotter and uncontrollable fires seen in the late dry season.

"By doing this, the landholders generate carbon credits, which can be sold on the international market for real cash. Which in turn can be used to support the traditional owners to manage the fire regime," said Dr Thornton.

Carbon accounting and savanna fire management is edited by Bushfire and Natural Hazards CRC researchers Dr Andrew Edwards and Adjunct Professor Jeremy Russell-Smith, from Charles Darwin University, along with The University of Melbourne's Dr Brett Murphy and CSIRO's Mr Mick Meyer. It is available through CSIRO Publishing. ■



BANKSTOWN FIRE INQUEST HIGHLIGHTS URGENT NEED FOR REFORM

Findings were handed down on 18 September 2015 by the New South Wales Coroner's Court in response to the inquest into the tragic fatal Bankstown apartment fire. The findings highlight significant failings in the current regulation of fire protection equipment and systems, specifically regulation surrounding the accreditation of individuals working in the fire protection industry, as well as the requirements for adequate installation of fire sprinkler systems.

The harrowing events of 6 September 2012, in which residents Pingkang (Connie) Zhang and Ginger Jiang were forced to leap from a window on the burning fifth storey of the Euro Terrace apartments, resulted in the death of Ms Zhang.

As the Coroner highlighted, this incident further demonstrates the urgent need for building regulatory reform in New South Wales to address the absence of required qualifications and accreditation of individuals carrying out critical life-saving fire protection work.

FPA Australia strongly backs a specific recommendation to implement a statutory regime for the accreditation and auditing of persons or entities that undertake annual fire safety checks and issue annual fire safety statements pursuant to the Environmental Planning and Assessment Regulation 2000.

In addition, the Coroner has recommended that the Australian Building Codes Board (ABCB) consider amending the National Construction Code (NCC) to require the installation of fit-for-purpose sprinkler systems in all new Class 2 and 3 buildings (buildings

of a shared residential nature). This should be done in conjunction with the possible reform of other fire safety requirements to ensure this significant improvement in public safety is achieved in the most cost-effective manner.

FPA Australia CEO Scott Williams said, "FPA Australia has spent more than a decade talking about the importance of life-saving fire protection equipment and systems and we advocate daily for reform. There have been multiple reports released into these issues and enough is enough. We don't want to see another report without the government introduction and investment of sweeping reforms and action, which are needed to prevent another death."

"This type of tragic event always shines a light on the importance of adequate fire protection measures for our community. However, FPA Australia is always saddened when it takes a loss of life before this issue becomes part of the national conversation—one life is one too many," said Mr Williams.

Before the September 2012 fire, Bankstown City Council issued notices to the building owners about multiple non-compliant fire and life-safety issues, such as missing warning signs, fire doors not shutting correctly and items missing from the fire alarm. However, many of these issues and more were not fixed. Disturbingly, a life was lost and another person left with horrific injuries.

In addition to some other specific requirements, the NCC's prescriptive provisions stipulate installation of sprinkler protection, among several other significant fire and life-safety

systems, when the effective height of a building is more than 25 m. As a result, apartments such as the Euro Terrace building are often deliberately designed and constructed to incorporate as many storeys as possible while ensuring the effective height is kept below 25 m. The potential result is that these types of buildings may be Australia's most dangerous.

Automatic fire sprinkler systems represent one of the most reliable and effective fire protection systems and have a proven track record over more than 100 years. FPA Australia strongly supports the Coroner's recommendation that Class 2 and 3 multi-storey residential buildings less than 25 m be fitted with additional mandatory fire protection systems, including sprinklers.

"Had the residential part of the Euro Terrace building been sprinkler protected, we consider it highly likely that the fire would have been controlled or contained and these residents may not have had to make the decision to jump," said Mr Williams.

Australian jurisdictions must implement a statutory regime for the accreditation and auditing of persons or entities that undertake critical life-saving fire protection work. While this tragic incident occurred in New South Wales, FPA Australia believes the issue is not limited to one state or territory. These findings should serve as a wake-up call to all levels of government throughout Australia to acknowledge that there is a significant life-safety risk to the community from the regulatory absence of accreditation of suitably qualified and experienced individuals.

There must be decisive action to reform requirements for individuals working in life-saving fire protection to prevent future tragedies such as the death of Ms Zhang. ■

Scott Williams,
CEO FPA
Australia,
speaks about
the report.

The full Coronerial inquest report can be found at www.coroners.justice.nsw.gov.au

UN ROLE REAPS REWARD

Professor Kevin Ronan from CQUniversity has been awarded the Bushfire and Natural Hazards CRC 2015 Outstanding Achievement Award. The award is in recognition of research leadership to advance the international standing of the Bushfire and Natural Hazards CRC. Prof Ronan was recognised for his project work and his work on the United Nations Sendai Framework for Disaster Risk Reduction. ■

The CRC has recognised Kevin Ronan's research leadership.



REVIEW OF CODE OF PRACTICE

FPA Australia has undertaken a review of the Code of Practice for its corporate members. This is part of FPA Australia's continued commitment to professionalism and strong leadership in providing guidance on best practice measures for the fire protection industry.

The Code of Practice prescribes the principles, standards of behaviour and service delivery requirements for signatories and helps to highlight the vital role that Association members, the building and construction sectors and the wider community all have

in promoting life-safety outcomes in relation to fire.

Compliance with the code:

- ◆ establishes the benchmark for the delivery of products and services to the community
- ◆ enshrines the principles of integrity and professional relations with clients
- ◆ upholds the principles of the competitive process.

View the updated Code of Practice at the FPA Australia website at www.fpaa.com.au. ■



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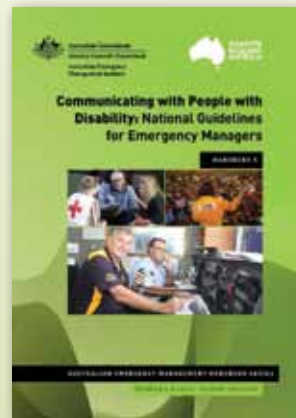
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Building a disaster resilient Australia

REDUCING RISK OF UNCONTROLLABLE FIRES AND TOXIC SMOKE FROM WASTE RECYCLING FACILITIES



Waste station fires produce toxic fumes that are detrimental to the environment and community.

PHOTO: XTRALIS

As a population grows so does its production of waste and household garbage. For centuries, this waste has been collected, dumped into a landfill and left to decay. However, as many landfills are being filled and in some cases overfilled, communities are looking into waste management alternatives involving new recycling and/or reuse programs.

BY **PAUL LESLIE**

Special Practices Manager Codes and Standards Asia-Pacific, Xtralis

In many countries, solid household waste is now being collected and carried to waste incineration plants rather than being dumped directly into landfill. The waste is stored in so-called waste bunkers or transfer stations until it can be destroyed. These waste bunkers can contain thousands of metric tonnes of solid waste, which is potentially self-combustible and subject to fire. Self-combustion (a process where heat develops because of pressure), spontaneous chemical reactions between the disposals and methane gas build-up are all potential fire creators and are concerns at these plants.

In May 2015, a major fire started at

the Wingfield Recycling Depot in South Australia, the fifth fire at this facility in 18 months. South Australia Waste Industry Network secretary John Fetter told the ABC: "This has happened one too many times and we're concerned about the health and well-being of our employees who work around the site and the local residents as well, and it's just got to stop." The cause of the fire, which occurred 18 months ago, is still being investigated. The measures implemented so far have not prevented the most recent fire, which was still burning two days after it started.

Waste station fires can be incredibly hazardous for both the on-site operators and the environment as outlined in 'Managing a subsurface landfill fire' on page 36 of *Fire Australia* Autumn 2015. Fires are invariably resource-intensive, long-duration jobs with the potential

to create significant interference and detriment to normal community activity. Public health issues are also a concern.

A smouldering fire in Chester Hill, New South Wales, left nearby residents outraged, as the fire burned for two weeks, causing toxic smoke to spread through the neighbourhood. Chester Hill resident and former Bankstown councillor Pam Gavin said during the incident: "The smell of burning rubbish and acrid smoke is appalling." An Environmental Protection Authority spokesperson said, "The fire, though contained, reignited occasionally, which was characteristic of smouldering fires". Residents with pre-existing heart and lung conditions or young children were advised to keep their doors and windows closed and limit their time outdoors.



Community waste stations pose significant pollution and contamination challenges for most smoke detection systems.



An early warning air-sampling smoke detection system protects a waste recycling facility.



Industrial smoke detection units are purpose-built for harsh environments.

Heavily contaminated firefighting water, which hampers further processing of the waste by making it harder to burn, has to be disposed of somehow and water does not always reach the potential fire hotspots that can still smoulder anywhere within the waste. Think of it like a campfire—the hotter and longer it burns during the night, the more the coals will burn. You only have to peel off a few layers in the morning for that fire to come back to life.

A waste facility fire could easily burn for two to three weeks if not completely extinguished—and this is why plant operators must constantly move, mix and turn the stored waste. It keeps any one spot from becoming too dangerous. However, even with operators constantly moving the waste, fires can still break out as a result of external sources. With millions of tonnes of waste available to feed the fire, detecting a potential threat before it has time to grow into an inferno is critical.

In July 2012, the then Fire Services Commissioner of Victoria launched a review into improved fire management in landfill sites. The subsequent report stated:

“Fire is also seen as one threat that is becoming increasingly important to regulatory controlling bodies and many environmental groups. Early response to a fire that could damage or affect equipment operating or controlling treatment plants will help reduce waste, environmental damage and pollution.”

Early warning smoke detection

A reliable early warning smoke detection system and a pre-planned response strategy are possible early interventions. Very early warning detection can help mitigate the fire risks in waste treatment or recycling facilities by detecting smoke from a fire or any potential smouldering smoke event such as:

- ◆ gas leaks
- ◆ high-frictional heat sources in large

- collection and sorting equipment
- ◆ human error
- ◆ ignition of on-site fuel and toxic chemicals
- ◆ overheating and faults in electrical switch equipment and cabling
- ◆ overheating and faults of pumps and machinery
- ◆ spontaneous combustion events.

Aspirating smoke detection (ASD) has long been seen as one of the most reliable and effective means of detecting fires in industrial facilities. With manageable controls and sensitivity capability for detecting the smallest amount of smoke, an appropriate purpose-built ASD will have a high resistance to background pollution and contamination, providing early warning.

ASD systems consist of a main detector or controller and a sampling pipe network with multiple holes that draw in air from the surrounding area. The air is typically filtered, removing most of the contaminants or dust, which can create false alarms. ASD systems can even detect smoke before it becomes visible to the human eye, providing time to react, investigate and determine the source of the fire. Furthermore, ASD systems incorporate automatic integrity monitoring to ensure an alert is raised at any time the ASD's ability to detect smoke is compromised, ensuring that no real alarm goes undetected.

Essex City Council's example

Adhering to the Waste and Emissions Trading Act 2003, the Essex City Council in the UK has developed five new waste transfer stations for new waste. As

part of its waste strategy, the council, with several organisations in the waste management industry, is producing new guidance for fire safety. The industry already operates within an existing set of safety regulations, which includes guidelines for handling flammable and combustible materials, but there is a growing feeling that more specific direction is required.

For one of its waste transfer stations, Essex City Council has opted to use a very early warning smoke detection system, VESDA VLI, which is designed to perform reliably in an industrial environment operating with high levels of background dust.

The key features considered when investigating the suitability of the industrial smoke detection system for a waste treatment plant that it should:

- ◆ be an active, monitored sampling system
- ◆ be robust with product longevity
- ◆ ensure ease of maintenance
- ◆ include a fully monitored intelligent filter
- ◆ include a purpose-built industrial detector
- ◆ offer reliable detection performance
- ◆ provide consistent sensitivity over the life of the detector.

While ASD systems are the ideal choice for these environments, it is crucial to remember that waste treatment facilities are extreme environments with varying conditions and containing machinery and equipment with lots of moving parts. Conditions differ from plant to plant, and some areas of the plant may be ideally suited to ASD, while others may not ■

A reliable very early warning fire detection system with a pre-planned response strategy is essential to protecting a waste facility, and the community and the surrounding environment.

NEW DIRECTIONS IN EMERGENCY MANAGEMENT

The AFAC and Bushfire & Natural Hazards CRC conference has cemented its place as the premier emergency services event in the region with almost 130 local and international expert speakers and 112 exhibitors.

BY **FREYA JONES**

Communications Assistant, AFAC

More than 1,500 delegates took part in the 22nd annual AFAC and Bushfire & Natural Hazards CRC conference in Adelaide during the first week of September. The industry's leading knowledge-sharing event for fire, land management and emergency services was an extensive four-day event that ignited the conversation around the theme *New Directions in Emergency Management*.

Held at the Adelaide Convention Centre on the banks of the River Torrens, AFAC15 showcased some of the world's leading experts in emergency management. The conference provided an opportunity to discuss and share new approaches in an all-hazard emergency management environment and to examine sector reform and the challenges and opportunities of a 'shared responsibility'.

Over three days, the trade exhibition hall was brimming with activity as 112 exhibitors displayed all the latest equipment, technology and emergency services vehicles across 205 booths. The Dräger Knowledge Lounge gave delegates a unique chance to meet the speakers and view the collection of posters. Delegates were keen to join in the conversation on social media, with #AFAC15 trending on Twitter throughout Australia on the final day.

The Bushfire and Natural Hazards CRC Research Forum kicked off the conference with 460 delegates, a new Research Forum attendance record. Delegates heard about how the latest CRC research is finding new ways to keep communities safe from natural hazards. Scientists covered the latest research into fire weather, floods, community resilience, satellite systems, emergency service volunteering and the economics of natural hazards. Dr



The crowd at Dr Mark Finney's Research Forum keynote on the spread of bushfires.

“There’s a theme that’s been going through a lot of these sessions around behaviour, collaboration, cooperation, transparency, accountability and welcoming a new perspective.”

Robyn Pearce, Tasmanian Fire Service



Mark Finney of the US Forest Service gave the opening keynote, describing his latest ground-breaking research on fire behaviour. Dr Alex Zelinsky, Chief Defence Scientist, discussed the Australian Defence Force's capability in natural hazards and expressed a desire to work with the sector to share learnings. Dr Paul Willis of RiAus described his challenges in preparing his home in the Adelaide Hills for bushfire.

The South Australian Governor, His Excellency Hieu Van Le AO, officially

opened the main two-day conference on Wednesday 2 September, marking it as one of importance for both the emergency management sector and the Australasian region. He reflected on the importance of diversity and inclusion, a topic that the conference addressed across the program, and spoke of his own journey as a refugee to Australia. Almost 70 sessions in the main program on Wednesday and Thursday featured speakers from throughout the region and further afield such as Canada, the

“This year at the conference I’ve really seen a change and a real maturity in the way we’re viewing this notion of shared responsibility.”

Gwynne Brennan, Country Fire Authority, Victoria



Top: With more than 1000 delegates in attendance, the conference dinner provided a unique opportunity for networking.

Above left: The trade exhibition hall showcased all of the latest vehicles and technology.

Above right: Feng Min Kan of UNISDR gives the opening keynote on the Sendai Framework for disaster risk reduction.

Left: Keynote speaker Catherine McGregor discussing diversity and her experiences in the ADF.

Right: The South Australian Governor, His Excellency Hieu Van Le, opens the conference with a perspective on diversity.

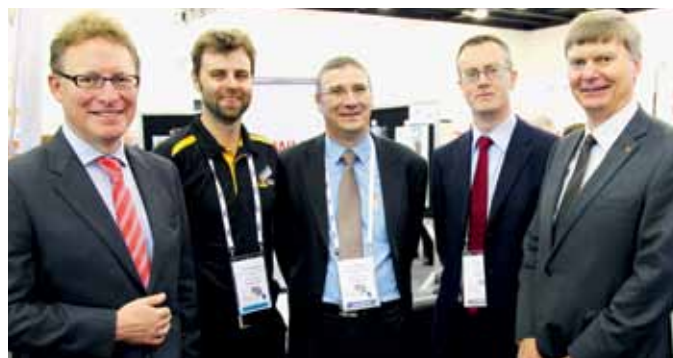


RESOURCES AVAILABLE

Both the AFAC and Bushfire & Natural Hazards CRC websites contain a wealth of information from the conference. All the papers, presentations and posters are available and will remain key resources into the future. Must-see short videos also capture delegates and highlight key learnings from the week. See www.afac.com.au and www.bnhcrc.com.au



The Dräger Judges' Choice Poster Award winner, Women and Firefighting Australasia's Bronnie Mackintosh (centre), discusses her project with conference delegates.



(L-R) Keynote speaker Dr Rowan Douglas, Willis Group; Nathan Maddock and Dr Richard Thornton, Bushfire & Natural Hazards CRC; Karl Jones, Willis Group; and AFAC CEO Stuart Ellis visit AFAC15 exhibitors.

“It’s probably the first time that we’ve actually started having honest conversations about diversity in the sector. It’s been quite good to watch a number of the speakers have some hard-hitting conversations around the fact that we need to challenge our culture.”

Adam Dent, Commissioner, NSW SES



TWEETS

@bnhrcr Right now, #AFAC15 is trending number 1 in #Australia! As @TreforMV said, what we’re talking about this week is important! #Adelaide

@Mel_BakerJones Really interesting study by Phil Campbell on media undermining safety messages #AFAC15 and their lack of concern when surveyed @NSWSES

@mel_taylor48 “Having research that feeds in so well to our operational needs is so important to us” #AFAC15 @bnhrcr Closing panel.

@mandycant1 Ari Henderson and Sandra Robinson @ParksVictoria talk gender #equality and unconscious bias - be your authentic self and be a leader #AFAC15

@SACountryHour Country Hour LIVE at #AFAC15 today - 1000 Aust & NZ delegates discuss emergency services disaster-related research

@zozo6686 Interesting to see the way #risk is mapped and modelled to better understand it & build #resilience from Dr Douglas @ResearchWillis #AFAC15

@wjwhittaker Wonderful insights into the complexities of disaster recovery in Moira Fahy’s film ‘Afterburn: the long story of recovery’ #afac15 @bnhrcr

@AnthonyClarkAU Fantastic workshop with @TreforMV at #AFAC15 professional development day, building social media engagement strategies. Great advice.

@AFACnews @chiefboz explains the complexities of Lac Megantic train derailment. Changes now to communication, regulations & public perception #AFAC15

@TTG_SES What an opportunity at #AFAC15 to meet new people, see the latest equipment and learn so much. Thanks to all that attended the last 2 days.

US, UK and China, sharing lessons on reducing risk and increasing resilience to disasters.

The opening keynote speaker, the Head of the United Nations Office for Disaster Risk Reduction Asia-Pacific, Ms Feng Min Kan, gave her address on ‘A new framework for disaster risk reduction’, which was adopted at the Third UN World Conference in Sendai, Japan, in March 2015. Dr Rowan Douglas, CEO Capital Science and Policy Practice, Willis Group, then presented on ‘Insuring Resilience: how we need some Aussie rules to handle global natural hazard risk’. Both presenters gave global and regional perspectives on the cost of disasters to the community, setting the scene for the conference to address the need for a new direction for emergency management in working together to minimise the impact of disasters to the community.

Group Captain Catherine McGregor delivered a powerful address with her opening keynote on day two, speaking candidly about diversity and her own experience as a high-profile transgender woman. With an impressive career spanning 40 years in the military and now a speechwriter and strategic adviser to the Chief of Air Force, as well as a cricket commentator and writer, Captain McGregor took delegates on her incredible personal journey, providing

insight into how the Australian Defence Force has approached issues of gender and diversity.

The week closed with three post-conference development sessions on the topics of social media, mapping and location technologies and a newly developed Japanese satellite Himawari-8. Three field study tours also took visitors to locations throughout Adelaide including the site of a fire at a Wingfield waste management facility and the flood-prone Brown Hill and Keswick Creek areas.

Several awards were presented to industry personnel during the conference, including the Laurie Lavelle Award, the Motorola Knowledge Innovation Awards and the Bushfire and Natural Hazard CRC’s 2015 Outstanding Achievement Award (see pages 6 and 12). Poster Awards, sponsored by Dräger, were also presented. The Judges’ Choice went to Women and Firefighting Australasia’s Bronnie Mackintosh and the People’s Choice went to Peta Miller-Rose of Queensland Fire and Emergency Services.

Next year’s event in Brisbane is set to be even bigger with AFAC16 powered by INTERSCHUTZ. The conference will be delivered in partnership with Hannover Fairs Australia, the organisers of INTERSCHUTZ, the world-leading exhibition for firefighting, fire protection and rescue. We hope to see you all there. ■

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MANAGED BY US MOB

Research is helping remote northern communities face natural hazards.

BY **NATHAN MADDOCK**

Communications Officer, Bushfire and Natural Hazards CRC

Deep in Arnhem Land in the Northern Territory, perched on a small hill above the banks of the often-flooded Roper River, lies the community of Ngukurr. When the rains come each wet season, the community is cut off by road—the crossing over the mighty river becomes impassable.

Bushfire and Natural Hazards CRC researchers from the Research Institute for the Environment and Livelihoods at Charles Darwin University and the University of New England visited the Ngukurr community in June for a workshop with local representatives, camping beside the lily-covered Yarriowarda billabong (Yellow Water in English).

“Yarriowarda is the place of kangaroo dreaming,” explained Cherry Daniels,

a senior Elder of Ngukurr. “The white gums resemble the kangaroos. It is a special place.”

Four CRC projects were represented at the workshop, which was joined by local community members and researchers from the Aboriginal Researcher Practitioners’ Network (ARPNet) who are conducting the research on the ground for the CRC. ARPNet is a network of Indigenous research practitioners in northern Australia who are trained in participatory and other research and evaluation tools, primarily in the field of natural resource management and livelihoods. Community-based Aboriginal researchers make it possible for research to be conducted in the first language of the participants, using locally adapted participatory tools, with due attention given to local cultural sensitivities.

ARPNet Director for Research and Training and CRC researcher Dr Bevlyne Sithole said this is not the only

advantage.

“They [local community members] do not feel like they are being researched. It feels like they are having a conversation with someone they trust.”

Sitting beside the billabong, hot clear days and cool nights under a full moon were spent delving into what works and what does not work in remote community disaster management.

Gorgeous lotus flowers and flourishing birdlife provided the entertainment, as did the approach of a king brown snake towards the workshop’s small marquee. Local knowledge kicked in and a small burn in the long grass drove the snake away.

Along with Ngukurr, the Scoping Remote North Australian Community Resilience project has also undertaken on-the-ground research in Gunbalanya (also known as Oenpelli), another Arnhem Land community. Further north and closer to the coast, Gunbalanya is also situated along a river basin and is regularly affected by cyclones and flooding.

The CRC research will benefit the communities living in the challenging environment along the coast of northern Australia, explained Dr Sithole.

“These remote Indigenous communities face many natural hazards on a regular basis. They feel like they are often unprotected and unprepared for these disasters because of their socioeconomic situation. They worry a lot about their survival and their wellbeing,” said Dr Sithole.

“It is really crucial that we engage with communities and talk to them about what is happening on country, so that we can find out how to bring the resilience back to the communities, understand what needs strengthening and what we should prioritise.

“At the moment communities feel very vulnerable. There is a worry that the young people are not fully aware of the risks from natural hazards.



PHOTO: HANAL AN HUNTER-KEMIE/ARPNET

Dean Yibarbuk, ARPNet Co-Chair and team leader for the Gunbalanya research, recording a completed matrix activity on perceptions of natural hazard risk over time.



PHOTO: HMALAN HUNTER-XENIE, ARPNET

“In the old days, the old people in the community knew how to react to natural hazards, they knew which places to go to and ways to read the weather and nature. They could tell way before something happened that it was going to occur, and there were some people who knew how to control weather or natural events,” said Dr Sithole.

This awareness and knowledge is much reduced; in some places it is being lost as time goes on.

Before the workshop, 22 ARPNet researchers spent several weeks in both Gunbalanya and Ngukurr, talking with community members and completing 188 interviews. The benefits of the researchers from the CRC attending the Ngukurr workshop are crucial, said Dr Sithole.

“The best thing about meeting on country is that it is easier to relate to the information when you can see where it is coming from, when you can really see the landscape and the challenges faced. You can hear firsthand the community researcher’s feedback and analysis of the situation,” she said.

“These communities can be isolated

for four or five months a year during the wet season. Being on country, we can go and see the high-water mark. It makes it more real. It is clear what is affected and the range of challenges presented.”

It is not just these immediate environmental barriers that come into focus quickly. Feeding the family is also a challenge that rises with natural disasters: from the rising cost of food, to reduced opportunity for hunting and collecting, and also, in some instances, an increased burden to feed multiple families.

“We can go to the local shop and see the prices. Then we hear from the community that these already high costs go up substantially when there is a natural disaster.”

What has been discovered?

The disaster preparedness of the Ngukurr and Gunbalanya communities is often linked with the seasons. Water levels in the rivers and billabongs fluctuate greatly between the wet and the dry. During the dry, fire brings lots of smoke to both communities. Their locations relative to hills and rock

outcrops can be both an advantage and a disadvantage.

Stories about vulnerability and safety are connected to people’s views about housing quality and infrastructure. Most of all, stories about vulnerability were related to an absence of people on country, and a weak connection to culture, traditional ceremonies and their traditional structures. A strong advocacy was expressed for bringing old ways back and putting people back on country to strengthen that connection to country and also the coping capabilities within families.

Traditional ceremonies are a large part of how Aboriginal communities cope with and manage natural hazards, and in today’s world these ceremonies do not occur as frequently as they used to.

Ceremonies require the commitment of many – the modern jobs that many hold often mean that the availability of the required senior people to stage a ceremony is just not there. Ceremonies take time, and leave from modern jobs does not allow this time. Ceremonies need to be recognised formally as a crucial part of managing country.

Kingswood Dirdi, ARPNet member, surveying Otto Dann, Gunbalanya resident, about his perceptions of natural hazard risk.



PHOTO: NATHAN MADDOCK, BUSHFIRE AND NATURAL HAZARDS CRC

Workshop participants by the Yarriowarda billabong at Ngukurr.

“We found that the communities are already weakened by other factors [other than emergencies]. Natural disasters just make this weakness worse,” explained Dr Sithole.

“When we interviewed the local communities, we were talking about big disasters and we found it became irrelevant—the size (of the disaster) did not matter. Any disaster leaves an impact on anyone who is already vulnerable. Any small bushfire, any small flood—that really affects a community in a fundamental way. It becomes seriously exacerbated in a big disaster,” Dr Sithole noted.

Connectedness to country is fundamental in remote communities. Their way of life depends on this relationship and as communities become increasingly connected to the outside world, this vital bond has been weakened.

“People feel safe to a certain extent in remote areas because it is their landscape. But that is not to say they are not aware of the harshness of their environment. It is accepted that the landscape is harsh and that there will be some challenges. At the moment they feel that there is not enough information available to them, from either their traditional ways or the modern ways, to allow them to be better prepared.

“Often I will hear comments like, ‘We heard that the climate is changing. Maybe for us Aboriginal people it is changing too fast. Maybe it will be very hard for us to change so quickly,’” said Dr Sithole.

The notion of a safe place understandably differs to that which modern society holds. For a cyclone, a safe place in these remote communities does not always refer to a cyclone shelter, as not all communities have such a shelter. It can refer to a brick house belonging to a relative. Improved housing remains a key issue in Ngukurr and Gunbalanya, especially the provision of

cyclone-coded housing and shelters. A key point that Dr Sithole noted was that design of shelters must recognise cultural norms and practices that might affect how these facilities are used.

Sheltering from a natural hazard in an Aboriginal community is not as simple as having one shelter that everyone can access. As part of their culture, different family members are required to avoid others in their family because of avoidance relationships.

“People need to meet their cultural obligations, but be safe too,” Dr Sithole said.

Community-wide emergency plans are another issue for remote communities. Less than a third of the surveyed population in Gunbalanya, and just over a half in Ngukurr, knew that there was an emergency plan. Many of these people had not seen the plan, which is held at the local police station.

Dr Sithole noted that to understand this issue, one must appreciate the extent of Aboriginal incarceration in the Territory, and the relationships that communities have with the police. “There is a reluctance among most people to go visiting the police station and openly ask questions about emergency management,” she said.

The research has found that all facets of emergency management can be improved, not just preparation and response. Recovery after a natural disaster is a key factor too, with many within communities possessing skills that can be called on in an emergency situation, but are not used.

“Jobs like operating machinery and chainsawing are required in the clean up, but local people can feel excluded from the response and not employed to undertake these tasks. People from Darwin often come in and are given these responsibilities, while locals are

given menial tasks.

“The Ngukurr and Gunbalanya communities are recommending a skills register of local people so the government is aware of the local response capability. These people can be called on within their community, or another community nearby, to assist in emergency response. They also want government to consider identifying individuals in the community as part of a disaster response team whose skills are developed over time and can operate in communities to help in times of disasters.”

At the end of the day, emergency preparedness, response and recovery in remote communities across northern Australia is not much different from in other locations around the country. It is about people, and Dr Sithole said this people-focused message comes through loud and clear in the research findings.

“For any planning or talking about emergencies, Aboriginal people should be central. They want to be part of it and know what is going on. From just knowing what resources are available, who is doing what, to knowing what houses are coded to different cyclone categories, to being involved and doing their part,” said Dr Sithole.

ARNPNet Co-Chair and team leader for Gunbalanya, Dean Yibarbuk, agrees that people are paramount.

“Government needs to see us as capable people who can be involved in planning and responding to disasters,” he said.

“The big message from this project for us mob is to find a way to get government to recognise that ceremony is important and that it is a big part of how we as a people understand and manage disasters.” ■

Find out more about this research at www.bnhcrc.com.au.

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BUILDING FOR BUSHFIRE IN WA



Firefighters work to protect a property during the 2011 Roleystone fire in Western Australia.

PHOTO: EVAN COLLIS

In response to a need for bushfire planning reform, in May 2015 the Western Australian Government appointed FPA Australia as an accrediting body for bushfire practitioners in accordance with the state's Bushfire Accreditation Framework.

BY **JOSEPH KELLER**

Communications Manager, FPA Australia

The urgent need for reform in bushfire planning, prevention and response has developed into a national conversation because of several catastrophic events across Australia in recent years.

As the threat of bushfire changes, so must the individuals and businesses implementing fire protection strategies, while the education and resources available to those involved in the industry must evolve.

Ever-present bushfire threat

The risk of bushfire has increasingly become characteristic of the Australian environment, as the country experiences gradual changes in the climate and harsher weather conditions. Recent disasters such as the Black Saturday bushfires in 2009, which claimed 173 lives and burnt more than 1.2 million hectares in Victoria, have prompted Australian authorities to take vigorous action to prevent such adverse events in future.

In Western Australia, the prevalence of causative factors such as inclement weather and dangerous fuel loads mean

the threat of bushfire is present almost on a daily basis. Fires can start suddenly, move quickly and affect vast areas of land, such as what was experienced in the Perth Hills bushfire of February 2011. Seventy-two homes were destroyed and another 32 properties were scorched.

The devastation of 6 February 2011 culminated in a major inquiry, directed by former Australian Federal Police chief Mr Mick Keelty. The Keelty Report highlighted a harsh reality that safety was not at the forefront for the Western Australian bushfire practitioners and authorities.

A commitment to prevent the risk of fire and potential damage to

lives, property and environmental assets requires diligence and expert knowledge of the design and landscape of built and natural environments. It also requires the ability to manage potential fuel loads, implement bushfire management plans, provide emergency services and increase awareness of the potential risk through education.

In response to the 2011 fires, the Keelty Inquiry made 55 recommendations based on findings of shortfalls in communication and complex relationships among fire agencies.

It was determined that the responsibility for bushfire planning and a commitment to fire prevention should be shared among state and local governments, emergency responders, industry practitioners and

the community. These tasks not only require sufficient education and channels of communication among all parties, but the ability for the implementation of appropriate bushfire management plans to be used by authorities and the community, and a framework that monitors individuals carrying out life-saving fire protection work.

Keelty Inquiry recommends sweeping reforms

Key reforms of the Keelty report included the transfer of responsibility for bushfire-prone areas being moved to the Western Australian Planning Commission and the implementation of the Planning for Bushfire Protection Guidelines. These important changes in turn provided the foundation of a bushfire consultant industry in Western Australia.

The independent review into the 2011 Perth Hills bushfires prompted the state government and authorities to work closely with FPA Australia—as the national peak body for fire safety—to develop an appropriate framework for the recognition of individuals who undertake bushfire assessments.

In March 2014, the Western Australian Government endorsed a raft of reforms to develop strategic planning controls and further strengthen its response to bushfire risk management. One reform was for the Western Australian authorities to commit to the development of a professional training and accreditation system for bushfire consultants to inform land use planning approvals and building permit processes.

As a result, in May 2015, the Western Australian Government appointed FPA Australia as the first organisation to be recognised as an accrediting body for bushfire practitioners in accordance with the state’s Bushfire Accreditation Framework, endorsing the implementation of FPA Australia’s Bushfire Planning and Design (BPAD) accreditation scheme at a local level.

The Bushfire Planning and Design Scheme

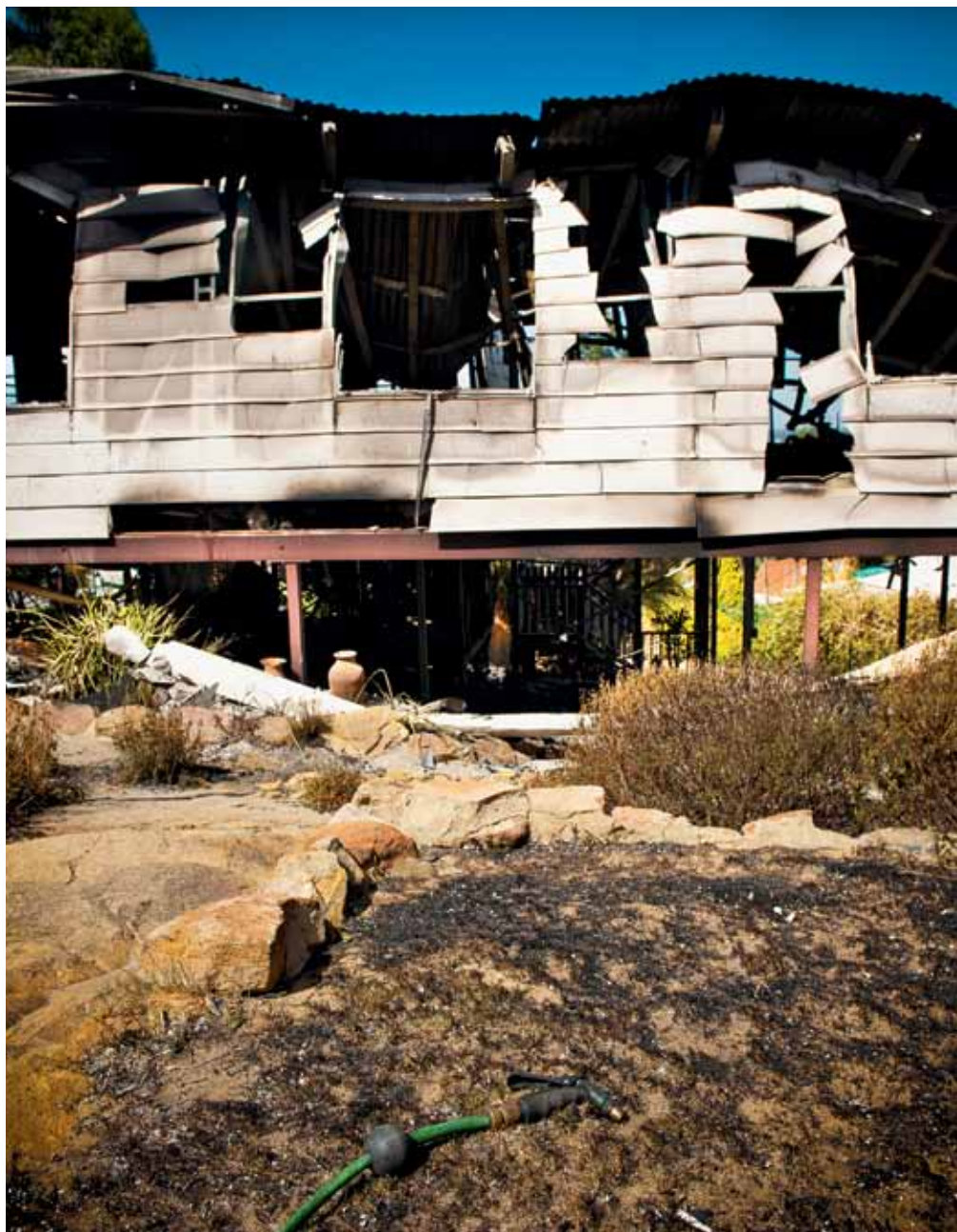
As the national voice for the fire protection industry, FPA Australia plays a pivotal role in providing detailed information, services and education to those working in, or associated with, the fire protection sector Australia wide.

BPAD was first developed in 2006 in response to government, community and industry demand for the establishment of a framework that would recognise practitioners who could deliver bushfire assessment to those undertaking development on land subject to bushfire impact.

Before the Western Australian Government appointed FPA Australia as the accrediting body, there was no way of identifying the competencies and experience of those individuals providing bushfire protection services. There were also no entry requirements to practising bushfire assessment, planning and design work and minimal frameworks for credentialing practitioners.

FPA Australia recognised the need for a credentialing framework and, following consultation with industry, regulators, fire agencies and other stakeholders, a framework was structured specifically to offer practitioners a state government-recognised scheme. This provides the community with the confidence that those conducting

PHOTO: EVAN COLLIS



A destroyed house from the 2011 Roleystone fire in Western Australia.



PHOTO: EVAN COLLIS

Infrastructure was also damaged in the Roleystone fire.

fire protection work are nationally accredited and committed to life safety.

The framework has already been successfully implemented in New South Wales and Victoria and is a foundation for land use planning and bushfire management. In New South Wales, where there is an application for development in bushfire-prone areas, the state government, local councils and emergency services such as the New South Wales Rural Fire Service strongly recommend the use of BPAD-accredited practitioners to demonstrate compliance with relevant legislation and ensure industry best practice.

BPAD in Western Australia

FPA Australia's BPAD scheme accredits practitioners who meet criteria based on specific competency requirements. Individuals must be able to demonstrate a detailed knowledge of and ability to practically apply the relevant planning, development and building legislation and policies, the Building Code of Australia (BCA) and AS 3959.

BPAD offers three categories of accreditation reflecting the skills, knowledge and experience of those assessing a BAL:

- ◆ Level 1 Bushfire Attack Level (BAL) Assessor certification allows an individual to provide assessments and general advice about the design and building requirements related to a determined BAL.
- ◆ Level 2 Bushfire Planning Practitioner—

Prescriptive certification allows accredited prescriptive bushfire planning practitioners to develop planning and building applications by applying prescribed design requirements in accordance with local regulatory requirements. This is in addition to the activities described for a Level 1 Practitioner.

- ◆ Level 3 Bushfire Planning Practitioner—Performance certification allows accredited bushfire planning practitioners to develop planning and building applications by developing alternative design solutions (excluding construction provisions) in accordance with local regulatory requirements. This is in addition to the activities described for a Level 1 and Level 2 Practitioner.

Currently all WA practitioners are BPAD level 1, however the framework includes provisions for level two and three consultants and the Association expects these categories to be rolled out in the near future.

Similar to the framework in New South Wales, the Western Australian Government strongly recommends using accredited BAL assessors and bushfire practitioners to determine BALs and prepare bushfire management plans. As well as strengthening the government and emergency response to bushfires, these measures increase community awareness of the risk of bushfire and

increase resilience.

This year, a significant milestone for FPA Australia has been the development of a tailored training course addressing a full set of competency requirements for a Level 1 Bushfire Attack Level Assessor in accordance with the Western Australian Bushfire Accreditation framework.

In September 2015, the Association offered the first of two training courses focusing on educating participants on building and planning in bushfire-prone areas.

Recent tragedies such as the Perth Hills and Black Saturday bushfires demonstrate that Australians can no longer be complacent and ignore the increasing threat of bushfire. Australians can no longer deny that it is the responsibility of each member of the community to reduce vulnerability to bushfire through adequate planning and decision-making.

FPA Australia's vision is to lead and support a professional industry, to minimise the impact of fire on life, property and the environment, for a safer community. This vision has been the driving influence behind the partnership with the Western Australian Government to develop the necessary frameworks to protect the community from such tragedies. We look forward to working with all of our stakeholders to uphold our commitment to provide advice and adequate resources to protect Australians from the threat of bushfire. ■

DIFFERENT HEMISPHERES COMMON CHALLENGES

Fire chiefs from Australia and the UK met to discover common thinking, approaches and problems in fire services management and operations in both hemispheres.

BY **PAUL HOLLAND**

Area Commander and Head of Projects and Service Transformation, Buckinghamshire Fire & Rescue Service

On 5 June 2015, members of AFAC attended a UK Fire Symposium hosted by Buckinghamshire Fire & Rescue Service on behalf of the Chief Fire Officers Association (CFOA) UK.

The symposium's challenging and informative agenda was designed to give insight into the issues faced in each hemisphere. It also enabled shared thinking on topics such as prevention, public safety, procurement and financial issues.

Councillor Adrian Busby, Chairman of Buckinghamshire & Milton Keynes Fire Authority, opened the seminar as one of several UK local government members in attendance. This demonstrated the close, connected nature of thinking between fire professionals and their political leaders. Chief Fire Officer Jason Thelwell provided some insight into the challenges faced by UK fire and rescue services, touching on the five-year journey Buckinghamshire Fire & Rescue Service has been on.

Also discussed were Australian public safety warning initiatives and public education programs that focus on taking ownership of our own safety to decrease the demand on fire services.

Mark Jones, former Chief Fire Officer of Buckinghamshire Fire & Rescue Service, provided an overview of the main challenges and differences

between the UK and the Australasian services, based on his experience working with colleagues in both hemispheres during his career.

AFAC President and Fire & Rescue NSW Commissioner, Greg Mullins, spoke about the challenges and initiatives that are being introduced to improve public safety. He expanded particularly on the Australasian Inter-service Incident Management System (AIIMS), which has been developed to enable fire and emergency service agencies to deal with large-scale bushfires and natural disasters. Commissioner Mullins emphasised that climate change was one of the biggest challenges faced and, although property fires are reducing, bushfires are increasing in both number and intensity.

Paul Hancock, CFOA Vice President, gave an insight into the UK fire service and CFOA as an organisation. He expanded on the various activities undertaken by fire and rescue services across the country to support local services. One particular initiative is CFOA's *Making a difference* plan, which showcases the diverse range of work that UK fire and rescue services are now involved in.

The seminar also provided some helpful insight into major industrial fires, with the need to get industry involved early in incident management highlighted. It is hoped this could lead to identifying how the wider costs of the incident can be minimised by including their incident management and recovery plans into the operational plan.

PHOTO: BUCKINGHAMSHIRE FIRE & RESCUE SERVICE



Peter Holland, Chief Fire and Rescue Adviser for the UK Government, spoke about the role of government in providing local services. He praised the fire services in England and Wales for their response to last year's floods, which saw the largest deployment of fire and rescue services in supporting flood-affected communities since World War II.

It was clear from the resultant discussion that all services face similar challenges. Fire and rescue services in both hemispheres are expanding their services in light of the reduction



in residential and commercial building fires. Many services now include medical emergency response and embed prevention teams to work with local authorities. However it is clear that a level of cover must be maintained to continue to deliver the emergency response service expected by the public.

Symposium participants also discussed the challenge of recruiting and retaining part-time and volunteer staff. This is a common issue across both hemispheres, with the pull on these groups becoming greater as a

number of other public services and non-government organisations and the military tend to recruit from the same pool.

Another topic covered was national procurement schemes, led by Kieran Timmins, CFOA Director for Corporate Services and Sector Improvement. AFAC shared its procurement strategy, which sees any member organisation written into new contracts so that the smaller services can benefit from the economies of scale afforded to larger services. CFOA is developing its own

strategy on behalf of the UK Fire and Rescue Services.

The UK Fire Symposium was an excellent opportunity for networking, with plenty of ideas and contacts exchanged. All who attended deemed the day a success. Although many differences were identified between the services, in particular climate and geographical size, the overall impression was that the issues we all face are similar and we can benefit greatly from sharing information to support one another. ■

Fire services across the globe face similar issues regardless of variations in climate and geographical size.

DRY DECADE LEADS TO FIRE RISK

Science tells us what areas are at risk this summer.

BY **NATHAN MADDOCK**

Communications Officer, Bushfire and Natural Hazards CRC

It has been a dry decade across most of the country, with large areas in every state and territory well below their average rainfall. Soil moisture levels are down in our forests and grasslands and when combined with an El Niño, large swathes of Australia show above-normal fire potential for the 2015–16 fire season. This is the view of the Southern Australia Seasonal Bushfire Outlook 2015–16,

released by the Bushfire and Natural Hazards CRC.

The country is now in the grips of an El Niño that began in May 2015, an event which is tracking as one strongest to affect Australia. There has been a significant shift towards drier conditions across the country in recent months due to this El Niño.

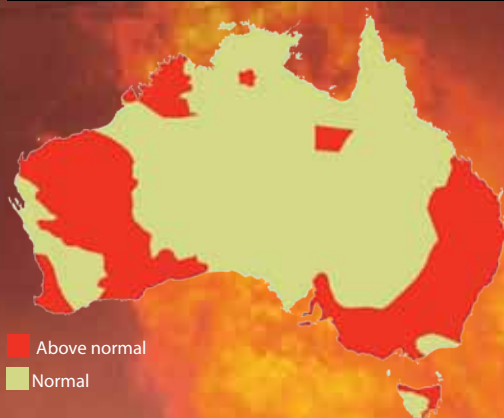
The outlook this season

The complexities between the climate conditions of the Pacific and Indian Oceans and their influences on our

weather were discussed at a workshop in Perth in late August. The workshop was attended by climatologists and meteorologists from the Bureau of Meteorology and fire and land managers from AFAC's Fire Weather Technical Group.

The workshop produced the bushfire outlook for southern Australia, below the Tropic of Capricorn. When combined with the northern Australia bushfire outlook, published in July, the result is the bushfire outlook across the country. Here we take a look at the fire risk in the southern half of Australia.

Figure 1 Southern Australia seasonal bushfire outlook 2015–16



Firefighters at Western Australia's Bullsbrook fire in January 2015.

PHOTO: DEPARTMENT OF FIRE AND EMERGENCY SERVICES, WA

Queensland

Much of Queensland remains drought affected and as a consequence has very low grass fuel loads.

The flammability of the forest fuels will increase as they continue to dry. South and west of Rockhampton, areas around Inglewood, the Sunshine Coast, Brisbane and the Gold Coast all had above-average rainfall in the lead-up to the bushfire season. The higher grass fuel loads in these areas increased the bushfire potential. Severe Tropical Cyclone Marcia crossed the central Queensland coast in February and the associated winds caused extensive but variable damage. The cyclone-damaged vegetation, particularly around Rockhampton, significantly increased the bushfire potential in that area.

New South Wales

The risk of higher-than-average temperatures due to El Niño has resulted in a rapid drying of forest fuels and above-normal fire potential in the forested eastern parts of NSW. Winter rainfall totals were near the long-term average over central inland areas, with

high grass growth a concern, and above-normal fire potential expected in these areas. The western half of NSW has generally received useful winter rainfall, close to or above the long-term average. However, a normal fire season is expected as there has not been enough rain for significant grass growth.

ACT

The soil moisture is high across most of the ACT, forming a base for vigorous grass growth. With the weather warming, the forests will begin to dry and an above-normal fire season is expected.

Victoria

Much of Victoria is expecting an above-normal fire season due to the extended rainfall deficit. Drier conditions in key areas of Australia that affect Victoria's weather, along with an unseasonably warm October, led to the fire season beginning early in some locations.

Areas with long-term rainfall deficits extend in a broad band from the South Australian border to the north-east foothills and include some areas of Gippsland. There are local occurrences of lowest-on-record rainfall in the west of the state, while short-term rainfall deficits exist across much of the state, with the exception of the south-west coast and Far East Gippsland. Given the long-term rainfall deficits, significant rain would be required to alter the outlook for above-normal fire potential for most of Victoria.

Tasmania

The potential for bushfire has been assessed as above-normal across northern and eastern Tasmania, as well as in the Midlands and the South East. The bushfire potential in the remainder of the state is currently normal. The first half of spring saw very low rainfall for almost all of Tasmania, especially in the North West. Above-average daytime temperatures have increased evaporation rates, which further increases fuel dryness.

South Australia

In South Australia the most likely scenario is for above-normal fire potential in parts of the Flinders, Mid North, Yorke Peninsula, Mt Lofty Ranges, Murraylands, Riverland, Kangaroo Island, Upper South East and Lower South East. These areas have experienced rainfall deficiencies with very dry soil moisture, resulting in very dry fuels and earlier than average curing of grasslands.

Western Australia

Although 2015 has been an El Niño year, the correlation between El Niño and rainfall and temperature patterns is weaker for Western Australia than it is for the eastern states. El Niño is not the only influence on WA's rainfall and temperature. Other factors, such as warmer-than-average sea surface temperatures to the north of Australia and in the Indian Ocean, seen through winter and spring, also affect the climate, and therefore the bushfire potential across WA. In the Murchison, Goldfields, Desert and South East areas, there is above-normal fire potential as a consequence of high fuel loads from above-average rainfall.

Above-normal fire potential is expected in the South West, but for the opposite reason, with a lack of rain and a long-term deficit in the soil moisture leading to high fuel loads. A normal fire season is expected for the Western Gascoyne, Central West, Wheatbelt and Great Southern regions. ■



2020 VISION FOR A FIRE-SAFE FUTURE

FIT FOR PURPOSE, FIT FOR ACTION

In response to recent fires caused at least in part by non-compliance, FPA Australia's goal—Vision 2020—is for competent personnel (fit for action) and compliant products (fit for purpose) across the building and construction industry by 2020.

BY **SCOTT WILLIAMS**

Chief Executive Officer, FPA Australia

In *The Prince*, Machiavelli wrote:

“There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things.”



Never has this been truer than in the Australian fire protection landscape at the moment. And yet, despite the challenges and the detractors, our industry now stands poised at the tipping point of some of the most significant changes in our history. The core driver of these changes is an acknowledgement at all levels of community and government that in a modern, innovative and developed nation, matters of fire safety must not be left to chance.

It has become clear in recent times and because of several high-profile events, such as the tragic 2012 death of Chinese student Pingkang (Connie) Zhang when she leapt from the burning fifth-storey window of a Bankstown apartment, that community expectations about fire safety are not necessarily matched by the existing regulatory frameworks and industry self-regulation.

There is, for example, a community expectation that individuals who conduct work on critical life-saving fire protection systems and equipment will be trained and competent. Unfortunately, in Australia this is often not the case. Additionally, as a community we have an expectation that buildings will be constructed and approved to

appropriate minimum levels of fire safety in accordance with relevant legislation. Again, recent events indicate that reality falls well short of expectation in this regard. The ambiguous nature of some state and territory regulations allows for an extremely relaxed approach to fire protection in the building and construction industry and this leaves the door wide open for a sector riddled with problems and potential disasters.

As the depth of the void between the current state of the industry and community expectations has become clearer, FPA Australia has sought to take our members and our industry forward to restore confidence and shape our own destiny before a major fire event means regulation is forced on us.

At its most basic level, this vision for a future safe from fire is made up of two critical components: competent personnel (fit for action) and compliant products (fit for purpose).

Competent people

For more than a decade, Association members, regulators and the community have been calling for professional recognition and/or accreditation for the fire protection industry. This is because, despite the potential effect on people's

safety, property and the environment when things go wrong, most fire protection activities in Australia are unlicensed. In 2013, without government funding or any other external support, and with reluctance from some corners of the industry, FPA Australia launched the Fire Protection Accreditation Scheme (FPAS).

The scheme, which was introduced with the 'Inspect & Test' category of work and now also covers Fire Systems Design and Fire Systems Certification, represents an industry benchmark. The scheme is costly and resource intensive and we have had to be brave enough to invest in it, knowing that professional recognition is the only way forward for our industry. We now have almost 1,000 accredited individuals and, more than ever, we are certain that the success of FPAS is fundamentally linked with the progression and success of our industry.

Compliant products

It may seem remarkable that the issue of non-conforming products and fire safety has become such a hot topic in mainstream media in recent times, but this level of public interest is a direct reflection of the growing community unease with the performance of Australian building and construction generally.

Incidents such as the Australian Competition and Consumer Commission's recall of Infinity Electrical Cable, a potential fire hazard installed in up to 40,000 premises Australia wide and sold in major retailers in 2012 and 2013, have eroded confidence in the power of existing regulatory regimes to ensure compliance. Add to this the significant fire at the Lacrosse apartment building in Melbourne's Docklands, which was fuelled by highly flammable non-compliant cladding installed on the exterior of the building, and it is understandable that the community and the media have realised that something is wrong.

This publicity, combined with strong advocacy undertaken by FPA Australia and other industry groups, has recently yielded a significant breakthrough with a meeting of federal and state building ministers agreeing to a plan of action to tackle non-conforming products flooding the Australian market. At the same time, a Senate inquiry has been launched to look into non-compliant building products.

Our 2020 vision

Despite the immense challenges of driving positive change in our industry, it is clear that change has arrived and



FPAS accreditation is a way for individuals to demonstrate their competence.

more is needed. We have reached the tipping point and as an Association we have a clear strategy for the future.

By 1 January 2020, our vision is that all FPA Australia members who conduct work in a category where FPAS exists will employ accredited staff and will be recognised as a professional company committed to training and continuing professional development. At the same time, by 2020 our goal is that all products that present a risk to people's safety because of fire undergo appropriate testing and certification, and then be included in a comprehensive listing scheme.

We have less than five years to achieve our goal, but I am optimistic

about the future. It is evident to us that because of these high-profile incidents, the community has demanded that we raise the bar for what is an acceptable level of fire risk posed by people and products operating in the fire protection industry. FPA Australia is committed to meeting and exceeding these expectations, despite the challenges.

We must do this in order to restore trust and ensure the future of our industry. But most importantly, we must do it to achieve the overall vision of our Association—to lead and support a professional industry to minimise the impact of fire on life, property and the environment, for a safer community. ■

SCIENCE IN MOTION USING RESEARCH FOR IMPACT

How is research being used in emergency management? A series of case studies by AFAC is unlocking some of the factors driving successful utilisation of research conducted by the former Bushfire CRC.

BY **BRENDA LEAHY**

Communications Officer, AFAC

Using research has many strategic and operational benefits. New knowledge, concepts, insights or tools generated from research can identify and address gaps in thinking and performance, according to AFAC's Manager of Research Utilisation, Dr Noreen Krusel. "We know that our industry is good at 'doing' research," said Dr Krusel. "The question is how good are we at using research? And how do we know?"

Surveys by the former Bushfire CRC have provided some practical insights into how agencies are managing research utilisation, according to Dr Krusel. Another useful mechanism is written case studies. AFAC is publishing a series of cases

dedicated to capturing the first-hand experiences of agencies using research and its impact. Extracts from the first two case studies in the series are included in this article. Full cases can be downloaded from the research utilisation page of the AFAC website at www.afac.com.au/initiative/research.

"Given that we typically learn on the job, as well as from others in our workplaces and networks, case studies are a practical tool to help capture and share knowledge," Dr Krusel said. "In these research utilisation cases, we asked the researchers and end-users from fire and land agencies, 'What elements or ingredients were present when research was being used effectively?'"

The agencies and researchers were also asked to identify the obstacles they

encountered or anticipated in using or implementing the research findings and to describe how they overcame these barriers. They also reflected on what they believed to be the critical factors for successful utilisation.

"From these insights, we are starting to get a more detailed picture of what's involved for adoption and implementation to take place," she said. "Basically, it's about understanding what makes research adoptable and how organisations can adapt and maximise the use of knowledge from research."

Dr Krusel said there are a number of stages from the initial idea, problem or opportunity to delivery of the research outputs and its transition or transfer to implementation by member agencies. At the same time there are several

CASE STUDY: HOW TASMANIA FIRE SERVICE USED EVIDENCE-BASED PRACTICE TO DEVELOP SHARED RESPONSIBILITY FOR BUSHFIRE RISK

In this case study, the Tasmania Fire Service (TFS) describes how it used research (evidence-based practice) to custom-build an approach for developing and growing shared responsibility for risk and resilience among the agency, at-risk communities and their householders.

The approach, which began as a conceptual model in a Bushfire CRC PhD research project by Dr Mai Frandsen in 2009, has since been embedded in TFS's operations and rolled out to more than 40 communities across Tasmania as the Bushfire Ready Neighbourhoods program.

In 2014, the program took out the Tasmanian category and a national award from the Australian Government for its contribution to promoting disaster-resilient communities.

In this case study, TFS describes its critical success factors as:

- ◆ a clear need to improve its approach to community education
- ◆ a collaborative action-research method that built trust and shared understanding of the context
- ◆ a commitment to re-engineer existing processes and practices to support implementation.

The TFS Bushfire Ready Neighbourhoods program in action at the Leslie Vale Field Day.

"We embarked on this journey knowing that there were, and continue to be, barriers and challenges. We were talking about building a community's capacity to be bushfire ready. Essentially, it is and continues to be about facilitated cultural change at an individual, agency and community level."

Peter Middleton, Community Development Coordinator, Tasmania Fire Service



PHOTO: LESLIE KING, TFS

common ingredients for successful research utilisation to occur.

"We know there is no one-size-fits all recipe to make it work. We hope that these insights give agencies some clues as well as inspiration on how to gain traction with their own research utilisation efforts."

Some of the common ingredients or elements of research utilisation include:

COLLABORATION—strong relationships and engagement between end users, their agencies, AFAC, researchers and research organisations to ensure the research addresses clear needs or questions for the organisation or industry.

CAPACITY AND CAPABILITY—an agency-wide approach for managing research and its outputs and/or a commitment to change or adapt practices to support the adoption and implementation of research findings.

PRODUCTS—concepts, tools or frameworks that enable users to interpret or adapt the research for their contexts and needs.

CULTURE—a commitment to identifying and addressing gaps in thinking and knowledge and supporting work-place learning.

CONTEXT—a priority for interpreting and sense making of complex science for operations.

COMMUNICATION—tailored communication initiatives, including professional development events to foster active involvement and ownership, and to assist learning from the research outset to implementation. ■



PHOTO: BUREAU OF METEOROLOGY

Fire weather forecaster Steven McGibbony uses the Spot Fire Forecasting course online from the Victorian Regional Forecasting Centre with Fire Weather Training Program Manager Monica Long.

CASE STUDY: RESEARCH UTILISATION PARTNERSHIP IMPROVES WEATHER FORECASTING

This case study reveals how the Bureau of Meteorology used the findings of PhD research by Dr Mika Peace for the Bushfire CRC to improve the capability of operational forecasters through its national learning and development program.

The case study describes the research and explains its transition into the bureau's forecasting operations through the national Bureau of Meteorology Training Centre. It also highlights the critical success factors in using and operationalising the research.

Partnering with the former Bushfire CRC, and now all-hazards focused Bushfire and Natural Hazards CRC, enabled the bureau to capture and operationalise new

and emerging science.

All of the Bureau's internal training modules relating to forecasting for fire incidents reference relevant Bushfire CRC research. These training modules will continue to be updated with the research outputs of the Bushfire and Natural Hazards CRC, ensuring forecasters are up-to-date.

Critical success factors are:

- ◆ an organisational commitment to identify, address and anticipate knowledge gaps using research
- ◆ a focus on cultivating and developing relationships with researchers to 'stay ahead of the science'
- ◆ a priority for interpreting complex science for operations.

"A critical success factor has been the Bureau's relationship with the individual researcher, Dr Mika Peace, and the ongoing collaboration with the CRC. Due to this engagement, I could translate the research output directly into operations and tailor the content to the organisation's specific capability and development needs for operational forecasting."

Monica Long, Fire Weather Training Program Manager, Bureau of Meteorology



BUILDING PRODUCT COMPLIANCE UNDER THE SPOTLIGHT

Never before has the issue of fire safety in Australia's buildings been so prominent. An open day at Exova Warringtonfire showed the way for ensuring building product compliance.

BY **JOSEPH KELLER**

Communications Manager, FPA Australia

Building product compliance under the spotlight

Fire safety in Australia's built environment has come to the fore. The community has become disenchanted by the apparent low standard of building and product compliance, specifically in relation to product compliance of life-safety and fire protection equipment and systems.

Incidents include the nationwide recall of non-compliant electrical cables, known as Infinity Cables, sold in major retailers in 2012 and 2013. It is believed that Infinity Cables were installed in around 40,000 Australian properties. Most of this non-compliant, potentially hazardous cabling remains in situ as there is no way to identify properties where it has been installed. This issue, among many others, validates that community expectations have not been met.

Inferior-quality products are sold openly on the Australian market and there is little to stop these products being installed and then incorrectly signed off. This was highlighted when the Lacrosse apartment building in Melbourne's Docklands caught fire in 2014. The blaze spread rapidly and vertically across multiple storeys because non-compliant combustible cladding material had been installed on the building's facade.

These incidents serve as sobering reminders of what can occur when fire protection, design, installation, testing and maintenance are not carried out by competent, qualified and accredited

individuals. Such incidents emphasise that products should be fit-for-purpose and comply with relevant safety codes and standards.

The implications of such fire emergencies, in particular where fatalities and injuries have occurred, call into question whether current regulatory frameworks in Australia are adequate to protect human lives, assets and the environment and minimise economic loss.

Importance of stringent compliance standards

FPA Australia recently proposed a new, risk-based alternative to the current requirements for demonstrating 'evidence of suitability' for products under the Building Code of Australia (BCA).

The concept was presented to delegates at the Building Ministers' Forum in July 2015. This forum provided government representatives from all states and territories opportunities to discuss industry and community concerns about the health and life-safety risks of potentially non-conforming building products and materials.

At present, the BCA stipulates that materials and the form of construction or design can be certified using one or a combination of:

- ◆ a report issued by a Registered Testing Authority showing that the material or form of construction has been submitted to the tests listed in the report, and setting out the results of those tests and any other relevant information that demonstrates its suitability for use in the building
- ◆ a current Certificate of Conformity or a current Certificate of Accreditation
- ◆ a certificate from a professional engineer or other appropriately

qualified person that:

- ◆ certifies that a material, design or form of construction complies with the requirements of the BCA
- ◆ sets out the basis on which it is given and the extent to which relevant specifications, rules, codes of practice or other publications have been relied on
- ◆ a current certificate issued by a product certification body that has been accredited by the Joint Accreditation System of Australia and New Zealand
- ◆ any other documentary evidence that correctly describes the properties and performance of the material or form of construction and adequately demonstrates its suitability for use in the building.

These provisions are not placed in any specific risk-based hierarchy and do not clearly define the boundaries of the suitability of materials used in Australian building and construction. The flexibility to demonstrate product compliance is so broad that under the National Construction Code it is equally acceptable to demonstrate evidence of product suitability by a laboratory test as it is to rely on the opinion of an individual with unknown qualifications or none at all.

Manufacturers and builders increasingly pursue cost-effective products and materials and often find cheaper alternatives. This, combined with the ambiguous requirements of Clause A2.2 of the BCA outlined above, the flexibility of international trade flows and lack of regulatory frameworks to govern these products, means that many non-compliant building products bypass the building-approval process and are installed, despite their potential risk to life safety.

Reforming the compliance boundaries

FPA Australia has developed a conceptual framework that proposes modifying Clause A2.2 of the BCA for products to be classified in three levels—high, medium and low. The objective is to minimise the risks to consumers, businesses and the community when building products fail to conform to relevant codes and standards at import and installation. This approach prescribes the rigour of assessment required for each risk category and that it should be consistent with the risk of product failure and the impact this could have on life, property and the environment, and potential economic loss.

Under this framework, a category three low-risk product such as



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plasterboard could be supported for use by any form of evidence that adequately demonstrates suitability for use. This provides maximum flexibility and reflects the low risk to health and safety should the plasterboard fail. Conversely, a life-safety product such as a fire sprinkler component would be a category one high-risk product that is installed for life-safety purposes. It would therefore need to be certified by a recognised body or individual consistent with a national product certification scheme for fire sprinkler components that has prescribed and consistent assessment rigour.

Product testing—Australia’s industry leaders

Exova Warringtonfire is one of the businesses leading the way through rigorous assessment of world-class fire-safety technology. Exova’s services include reaction to fire and fire resistance testing, fire engineering, training, fire consultancy, fire risk assessment and voluntary and mandatory fire certification.

In May 2015, Exova Warringtonfire’s testing laboratories in Dandenong, Melbourne, hosted 70 Australian building officials and practitioners to witness full-scale fire tests. These tests demonstrated to those who design or approve life-saving fire protection systems the responsibilities and testing that should be carried out on the elements that are approved and used in building and construction. Demonstrations included an illustration of how intense fire can become in a controlled environment.

Three tests were conducted:

1. full-scale fire door test, alongside a solid-core door, which is often mistakenly considered to be just as adequate
2. room test, to assess an internal lining and determine the time for an empty room to be fully engulfed in flames
3. bushfire test, to assess how products on the exterior of a building reacted to various aspects of a bushfire attack.

Exova Warringtonfire’s testing clearly demonstrated that the use of non-compliant products (such as a solid core door in place of a fire door) cannot be deemed fit for purpose.

Exova Warringtonfire’s aim—to demonstrate industry best practice in critical fire protection systems testing—directly complements FPA Australia’s strong position on the importance of building product compliance and the need for adequate government regulation. The ability to minimise the effects of a fire and further prevent fire depends on rigorous product testing and the ability of

building practitioners to quickly and easily identify compliant products.

FPA Australia sees the work of organisations such as Exova Warringtonfire as industry best practice in Australia and applauds its shared commitment to leading and supporting a professional industry to minimise the impact of fire.

The way forward for building product compliance in Australia

FPA Australia is promoting the implementation of a national register for high and medium-risk building products to provide transparency and improve the consistency of products across the Australian marketplace.

However, the application of building products as fit for purpose will only occur if state and territory regulators introduce, implement and enforce applicable legislation, clearly outlining the expectations for

referenced standards is a necessary investment in quality assurance.

However, as Australia migrates from a local product market towards more dynamic and flexible international free trade, it is increasingly difficult to verify that building products are fit for purpose without significantly reforming legislation. This includes product testing frameworks and endorsement of the work of companies who specialise in these fields, such as Exova Warringtonfire. Their work should function in alliance with the implementation of stringent legislative product compliance standards, which should incorporate education about the responsibilities of correct practice with product specification, selection and use in the design, installation and approval process. FPA Australia believes this is the only way forward to ensure successful fire safety outcomes that reflect community expectations. ■

“These incidents serve as sobering reminders of what can occur when fire protection, design, installation, testing and maintenance are not carried out by competent, qualified and accredited individuals.”

Scott Williams – FPA Australia Chief Executive Officer

product selection, documentation, certification and use. When products are imported by a global supplier or installed by practitioners who operate solely for profit with blatant disregard for fire safety, this process becomes increasingly problematic and it is difficult to achieve the fire protection and life-safety outcomes the community expects.

There is no regulatory framework in Australia that commercially incentivises individuals and businesses to seek a professional approach to demonstrate their products and systems comply. No stimulus or benefits exist for manufacturers, suppliers, builders, designers, installers and even regulatory authorities to rigorously test products for compliance.

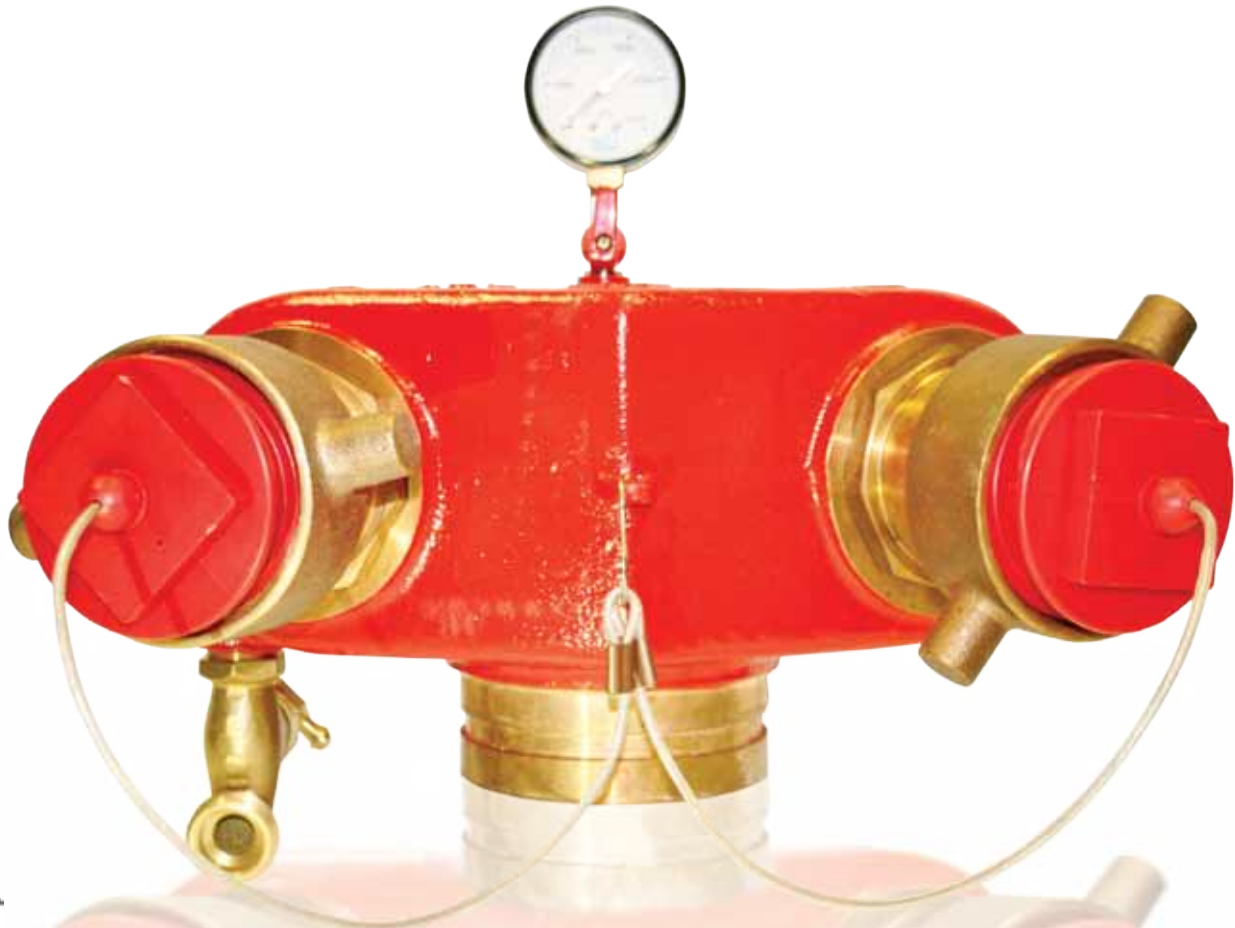
Multiple fire protection products are required to operate infrequently but must perform first time, every time, in a fire or emergency. Unfortunately, without a risk-based approach to test and certify products that are understood to be flooding into the Australian market, life safety and confidence of the community cannot be guaranteed.

Testing products to statutory



A full-room fire test being conducted by Exova Warringtonfire.

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PLANNING TO MAKE A DIFFERENCE IN NSW

The Blue Mountains fires in 2013 have provided a wealth of research data that has helped RFS change its approach to bushfire safety.



PHOTO: GARY PHAYES, PROVIDED BY NSW RFS

CRC research guides bushfire survival planning.

BY **NATHAN MADDOCK**

Communications Officer, Bushfire and Natural Hazards CRC

New ground was broken in 2013 for bushfire in NSW when catastrophic fire danger ratings were issued for heavily populated areas the first time in the state. The most challenging year for bushfires in NSW in more than a decade saw temperatures soar in January of that year, setting new records. With the extreme temperatures and strong winds, many fires took hold. Three of the most significant were at

Yass, Coonabarabran and Deans Gap in Shoalhaven. These fires were followed in October 2013 by a series of fires in the Blue Mountains—the huge State Mine Fire, along with fires at Mount Victoria and Springwood—and dangerous blazes in the Southern Highlands and around Port Stephens. The fires in the Blue Mountains destroyed more than 200 homes in just a day.

Following these devastating fires, the New South Wales Rural Fire Service (RFS) had an opportunity to find out just how communities had coped under duress. Had members of these

communities planned and prepared for a bushfire appropriately? Did they even consider themselves at risk of a fire? The RFS called in the Bushfire CRC, and then the Bushfire and Natural Hazards CRC (which began in July 2013), to conduct community-focused research in fire-affected areas.

“2009 was really a turning point for communication and engagement activities for fire services,” Anthony Clark, Director Corporate Communications at the RFS, explained.

“We had had the same approach for a very long time and suddenly there was a renewed focus, shifting away from ‘Prepare, stay and defend or leave early’ to survivability. A much stronger emphasis was placed on planning, preparation and bushfire survival plans.”

Victoria’s Black Saturday bushfires in 2009 had changed the landscape of community bushfire safety across the whole country. Fire agencies had been operating in this area for several years, but bushfire preparation and planning became a lot more sophisticated.

“After Black Saturday, the pendulum swung so far in one direction because there was so much new material that was being put out to the community,” Mr Clark said.

A new approach

RFS had a large amount of quality data at its disposal thanks to the CRC research. Interviews had been conducted with 432 households affected by the fires, alongside 775 completed online surveys from across the state. The findings showed that the bushfire safety messages were not getting through to the community. The RFS needed to change its approach.

“The research through the CRC

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“If we present to people that it is easy, that it is do-able, people are more inclined to do it. This is a direct outcome of the CRC research.”

Anthony Clark, Director Corporate Communications, NSW RFS

after the fires showed us that fire safety information actually became quite overwhelming for many people,” said Mr Clark.

“Fire agency messages are quite complex, not just for communities, but for our own people too. Fire is such a complex beast that when you start considering things like fire danger ratings, alert levels, messages around hazard reduction and fire weather warnings, it becomes quite overwhelming for people. This was one of the key findings that came out of the CRC research.”

There were three main findings that the RFS believed were the most important to how they approached community bushfire safety—people not personalising the risk, people not understanding how a bushfire would affect their house and people thinking bushfire preparation was just too hard.

“People generally do have a good appreciation that they live in an at-risk area. The problem is that they do not personalise that risk; they think it will happen to somebody else. It is not a new finding, but the scale of this was surprising,” said Mr Clark.

“It is the ‘She’ll be right mate’ attitude. People thinking it will happen to someone else, so why would I bother doing anything about it.”

CRC researchers spoke with people who were directly affected and living in the fire scar areas, including in the Blue Mountains. Many of them simply had no real appreciation for the real risk of fire. They knew a fire could happen, but they did not actually think about how it would affect them.

Writing down the household bushfire plan has long been advocated by fire agencies. It was considered that if a household did not do this, residents would not be prepared.

“Over the last few years in Australia we have probably overstated the importance of a written bushfire plan, and we have probably been unrealistic



PHOTO: DAVID BRUCE, BUSHFIRE AND NATURAL HAZARDS CRC

Researchers visited the Siding Spring Observatory to gain important insights after the Coonabarabran bushfire.

in our expectations of the community,” said Mr Clark.

“It can be as fun as doing a tax return. Nationally, because of the expectation of people having a written bushfire plan, fire agency expectations are disconnected from the reality of the community actually doing it.”

Using the three key research findings, RFS set about completely revamping its bushfire survival plan information.

“It is a complete rewrite,” Mr Clark said. “We have adjusted a lot of the messaging so it is more concise and relevant, while maintaining the national

consistency we have strived so hard for.”

“For the first time with our bushfire survival plan, we have gone out to the community and asked them what would work—sitting down with people as they work through the plan to see what works and what doesn’t. We have really simplified the process and focused more on the discussion that people can have about making their plan.

“The bushfire survival plan had become more of a product, but we actually need to focus on the process that people go through so that they have a better understanding of their

personal capacity, their limitations and their ability to actually plan and prepare for a bushfire."

Mr Clark explained that RFS testing, conducted with behaviour change experts Behavioural Architects, has shown that people are more inclined to use the new material because it is more user friendly.

"The research that we have done through Behavioural Architects showed that people thought completing a bushfire survival plan may take a whole weekend or even longer. There was simply so much information factored in. Our testing has shown that people are confident of completing the new plan in about 20 minutes.

"Completing this plan is the first step for people and if they do want more detail in their plan, the information they need is still accessible."

Increasing awareness

The research provided further opportunities for RFS to tweak its community safety approach. Public safety campaigns are not undertaken lightly, but the data have helped RFS create its new bushfire awareness campaign, which will run for the next three years across TV,

print, radio and online media.

"Our approach now is to personalise fire," said Mr Clark. "It is a pretty big shift for us.

"We have developed the *I am fire* campaign that challenges some of the myths and misconceptions. We are presenting people with some of the cold hard facts, things like 90% of homes destroyed during a bushfire are actually destroyed through ember attack. We are giving people the simple steps that will make a difference to the survivability of a person or a home during a fire."

Online videos focus on simple steps that people can undertake that will make a big difference to the safety of themselves, their family and their home if a bushfire were to threaten. Examples are given of the three things that can be done around the home that will make the biggest difference to its survivability.

"There has been a big disconnect between our expectations as fire agencies and the reality of the community actually completing this work," said Mr Clark.

"If we present to people that it is easy, that it is do-able, people are more inclined to do it. This is a direct outcome of the CRC research."

Internal benefits

The research has also taken RFS personnel on a journey too, helping to crystallise messages.

"The research has also been really important in delivering a bit of a reality check to our own people," explained Mr Clark.

"CRC lead researcher Dr Jim McLennan presented at our community engagement conference last year and a lot of people were really shocked by the national figures around the take-up of written fire plans. It made us question our approach and really look for alternatives that would make a difference to the safety of the community. Getting our own RFS volunteers across the research has been instrumental in bringing all of this together as well."

Mr Clark believes that while it is still important to use the expertise of people in the fire and emergency services, at the end of the day, the product has to be what the community finds useful.

"This is a good example of the need to go out to the community, to take guidance from the community and test ideas, to make sure we are actually doing something that will ultimately be accepted." ■

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BOSTON WIDE-BODY AIRLINER 1974

BY **BARRY LEE** OAM

The vulnerability of aircraft interiors to fire damage, even without involvement of onboard propulsion fuels, was illustrated by this incident, which occurred on 19 April 1974. The aircraft, a TWA Lockheed L-1011 TriStar, was left unattended after a post-flight inspection following an 8pm arrival from Los Angeles at Boston's Logan International Airport. At about midnight an employee smelled smoke, boarded the aircraft, discovered smoke coming from the rear of the cabin and alerted the fire department. He noted that the cabin lights were on and that the auxiliary power unit was running. The fire caused some \$17 m damage to the \$22 m airliner before it was controlled by the Massport and Boston Fire Departments.

At 54 m in length, the L-1011 had a dropped cabin ceiling with an uncompartmented overhead concealed space about 0.75 m deep. This space

contained insulation, air conditioning ductwork and extensive electrical cabling. Firefighting operations were difficult—passenger windows could not be broken with axes until the heat of the fire reached them and topside ventilation with power tools was hampered by poor footing on slippery fuselage surfaces. Before ventilation could be accomplished, the fire broke through the aircraft skin and self-vented.

There was approximately 26,000 L of fuel on board the aircraft at the time of the fire, located in wing tanks and in one fuel line running to the rear engine. Fortunately, the fire was above the tanks and fuel lines.

The fact that the 300-seat aircraft was on the ground and located near a fire hydrant with a good water supply was critically important. Had it been airborne or out on a taxiway where there is typically no water supply, fire control would have been problematic. As it was the aircraft was a write-off. ■



Aircraft specifications

Version L-1011-385-1
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Weight 110,000 kg



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FIRE AUSTRALIA 2016 CONFERENCE DETAILS RELEASED

Risk, Liability, Exposure —Delivering Positive Outcomes
Wednesday 4 and Thursday 5 May 2016

Melbourne Convention and Exhibition Centre

We are excited to announce the details for the Fire Australia 2016 Conference and Trade Show, the premier fire protection event for the southern hemisphere.

The 2016 conference will also incorporate the HazMat Conference, meaning even more attendees, speakers and exhibitors will be on offer from across the spectrum of fire protection and emergency response, special hazards and dangerous goods.

The conference dinner will be held at the Melbourne Cricket Ground on the evening of Wednesday 4 May and will no doubt feature a sporting theme. The trade show will again provide a major highlight and is sure to draw many visitors, building on the attendance seen at the record-breaking 2015 event on the Gold Coast.

The HazMat presentations will run alongside the two Fire Australia sessions, meaning attendees will be spoilt for choice.

The 2016 conference theme is Risk, Liability, Exposure—Delivering Positive Outcomes, and attendees can expect many of the presentations to focus on these important issues.

More details will be announced soon regarding sponsorship, the exhibition and a call for speakers. We encourage anyone interested in presenting at the conference to begin considering this theme and how they might engage with it.

More announcements on Fire Australia 2016 will be available at www.fireaustralia.com.au.

EAHL LICENCES 2 AND 3 TRAINING SPECIAL OFFER EXTENDED

FPA Australia specialises in providing training and assessment to enable technicians to apply for a Qualified Persons' Extinguishing Agent Handling Licence (EAHL).

Individuals who handle certain extinguishing agents require an EAHL unless exempted. These requirements are imposed by the Federal Government. Our EAHL training products are delivered as self-study units, where each student enrolls and receives materials to work through in their own time and pace.

We are extending our special offer, including up to 50% off training for EAHL 2 and 3, for our members. The member price offer of \$1650 has been extended.

Once self-study is complete, students can then enrol in a regular assessment session in order to be assessed. FPA Australia acknowledges that complying with the licence requirements is an added expense; therefore we aim to assist our members wherever possible by providing discounted training and assessment.

More about FPA Australia's training options is at www.fpa.com.au/training.

AFAC16 CONFERENCE DETAILS ANNOUNCED

AFAC16 powered by INTERSCHUTZ
30 August to 1 September 2016
Brisbane Convention Centre

Co-produced with the Bushfire and Natural Hazards CRC, the AFAC16 powered by INTERSCHUTZ conference's theme and focus is Mitigation – Response – Recovery: Getting the balance right.

Emergency and disaster management has advanced dramatically over the past five years with fire and emergency service agencies worldwide implementing new and innovative ways to mitigate and respond to disasters.

Recent worldwide catastrophic events have identified the need for better recovery capability. This conference will take a detailed look into how agencies are "getting the balance right", within new, diverse, inclusive multi agency disaster management services.

The AFAC16 powered by INTERSCHUTZ conference will attract delegates and visitors from emergency and security services, all levels of government, non-government organisations, research and education from Australia and all over the world.

For more information visit www.afacconference.com.au.

FPA AUSTRALIA ASSESSMENT WORKSHOPS

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24 to 26 November, Queensland
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2016

9 to 11 February, Western Australia
 9 to 11 February, Queensland
 22 to 26 February, Victoria

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CONRAD BARR

Conrad Barr has been appointed to the position of ACT Emergency Services Chief Officer. He replaces Tony Graham, who retired from the position in June after more than a decade on the job. During his time in the emergency services Mr Graham was involved in a range of operation activities including the Thredbo landslide, Canberra hospital explosion and numerous storm and fire events. Mr Barr steps into the role with almost three decades of experience in emergency response and management. As the former Deputy Chief Officer for ACT Fire & Rescue, Mr Barr helped to expand the force's volunteer network to become the largest in the ACT.

PAUL BLACK

Paul Black has been appointed as State Fire Manager of the Parks and Wildlife Service, Tasmania. Mr Black replaces Adrian Pyrke, who retired earlier this year. Mr Black was previously a Fire Management Officer for eight years, based in the Parks and Wildlife Service southern region, and managed the region's fuel reduction burning program and the regional and statewide response to fire.

LUCINDA NOLAN

Lucinda Nolan has been appointed as Country Fire Authority, Victoria's new Chief Executive Officer. Ms Nolan has an impressive background, with more than 30 years of service at Victoria Police, and brings with her outstanding leadership experience across a range of roles. She joins CFA following her previous role as Victoria Police's Deputy Commissioner, Regional Operations.

JOE BUFFONE

Joe Buffone has been appointed as Chief Fire Officer at the Country Fire Authority Victoria. Mr Buffone joins CFA from his previous role as Deputy Emergency Management Commissioner with Emergency Management Victoria. Mr Buffone was CFA Deputy Chief Officer – Readiness and Response, for two years until 2014.



Getting the balance right

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In 2016 Brisbane will host the largest and most important emergency services and public safety conference and trade exhibition in Australasia - AFAC16. The event will mark the beginning of a new partnership with Deutsche Messe Group of Companies, organiser of INTERSCHUTZ, the world-leading exhibition for firefighting, fire protection and rescue. Held at the Brisbane Convention and Exhibition Centre, the theme for AFAC16 is

Mitigation - Response - Recovery: Getting the balance right.

Emergency and disaster management has advanced dramatically over the past five years with fire and emergency service agencies worldwide implementing new and innovative ways to mitigate and respond to disasters. Recent worldwide catastrophic events have identified the need for better recovery capability. This year's conference will take a detailed look into how agencies are "getting the balance right," within new, diverse, inclusive, multi-agency disaster management services.

afaconference.com.au | #AFAC16

BY IAN FINDLAY

Technical Coordinator, FPA Australia

STANDARDS AUSTRALIA

FP-001 Maintenance of fire protection equipment

FP-001 continues to work on the project to amend AS 1851-2012. Recent discussions have focused on baseline data.

FP-002 Fire detection and alarm systems

The revised AS 1670.1 and AS 1670.4 standards are expected to be published soon and will hopefully be adopted in BCA 2016. A new standard AS 1670.5 will also be published, which includes the special hazards detection and control requirements originally intended to be included in the AS 1670.1 revision. New projects have begun on a variety of standards including revision of AS 4428.4 *Intercommunication systems for emergency purposes* and AS 7240.4 *Power supply equipment*.

FP-004 Automatic fire sprinkler installations

The draft revision of AS 2118.1 *Automatic fire sprinkler systems – General systems* will not be published in time for adoption in BCA 2016. As such, the committee is exploring its options for how best to progress this.

FP-009 Fire hydrant installations

The re-release of AS 2419.1 *Fire hydrant installations – System design, installation and commissioning for combined procedure* has stalled, likely to the increased workload associated with many standards being revised in time for adoption in the BCA 2016.

FP-011 Special hazard fire protection systems

As highlighted regarding FP-002, the detection and control requirements for special hazards systems will be published in a new standard AS 1670.5 rather than as part of AS 1670.1.

FP-018 Fire safety

AS 5637.1 *Determination of fire hazard properties – wall and ceiling linings* has now been published. FP-018 also continues to work on the revision of AS 1530.8.1 and AS 1530.8.2 *Testing of elements of construction for buildings to simulate bushfire attack and new standard AS 5113 Fire propagation testing and classification of external walls of buildings* (public comment closing 2 November 2015).

FP-019 Passive fire protection

The revision of AS 1905.1 *Components for the protection of openings in fire-resistant walls – Fire-resistant doorsets* has now been published.

FP-020 Construction in bushfire prone areas

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

FP-022 Fire protection of mobile and transportable equipment

AS 5062 *Fire protection for mobile and transportable equipment* has been released for public comment (closing 11 November 2015).

LG-007 Emergency lighting in buildings

LG-007 continues to revise the AS 2293 Suite of standards for emergency escape lighting and exit signs.

TECHNICAL ADVISORY GROUPS AND SPECIAL INTEREST GROUPS

TAC/1 Maintenance of fire protection systems and equipment

FPA Australia's document on baseline data is on hold while this topic is discussed by FP-001 in regards to the current AS 1851-2012 amendment project. TAC/1 is exploring a possible document on the issues regarding mixing of 'EXIT' and 'running man' exit signs.

TAC/2 Fire detection and alarm systems

TAC/2 has been consulted regarding FPA Australia's submission to the Senate inquiry on 'Use of smoke alarms to prevent smoke and fire related deaths'. Submissions to this enquiry closed 31 August 2015 and the reporting date for the Senate's Legal and Constitutional Affairs References Committee responsible for this Inquiry is 3 December.

TAC/3/7 Portable and mobile equipment

TAC/3/7 has continued work on an Information Bulletin Frequently Asked Questions: Portable fire extinguishers, which is to be published by the end of the year.



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

TAC/4/8/9 discussed the fallout because AS 2118.1 was not published in time for adoption in the BCA 2016.

TAC/11/22 Special hazards fire protection systems

A draft Information Bulletin on oxygen reduction fire prevention systems has now been developed by the working group and technical department. This is now being reviewed by TAC/11/22. TAC/11/22 continues to work on a variety of other technical documents.

TAC/17 Emergency planning

TAC/17 has discussed several matters currently not covered (or not covered in detail) in AS 3745. The committee has undertaken to further review this with the intent to develop a project proposal to revise or amend the standard, accordingly.

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

TAC/18 and TAC/19 continue to work on a number of technical documents, the most advanced of which is the draft Good Practice Guide on fire stopping systems.

TAC/20 Bushfire safety

TAC/20 did not meet in this round.

TAC/T

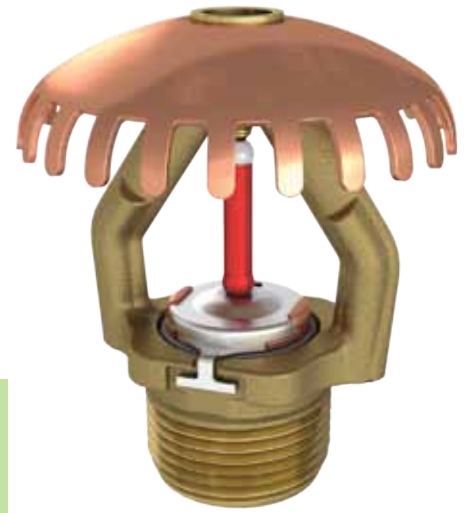
TAC/T discussed the upcoming restructure of Skills Councils and how this will affect the development

FIRE AUSTRALIA

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