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Pertronic Industries congratulate WestConnex on the successful completion of the M4 East motorway.

One of the Pertronic F220 weatherproof F220 fire indicator panels supplied for Sydney's M4 East motorway tunnels.
FAREWELL AND THANKS TO SCOTT WILLIAMS

In April, after more than 11 years at the helm of Fire Protection Association Australia, Scott Williams departed from the role of Chief Executive Officer. Starting in early 2009, Mr Williams took the Association from humble beginnings to create a national organisation.

Under his leadership, FPA Australia set about to increase its influence by creating strong relationships with government at all levels and seeking a voice for the industry on all fire-related issues. This increased engagement saw the Association gain a seat at the Australian Building Codes Board’s Building Codes Committee and become a trusted advisor to various inquiries, including the Shergold-Weir Report, allowing it to help shape some of the most important reforms in fire protection.

It also led to FPA Australia’s creation of the Fire Protection Industry (ODS and SGG) Board to manage the fire protection industry compliance with the Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 on behalf of the Australian Government.

Driving this activity was a commitment to increase the professionalism of the fire protection industry and give greater certainty to the community. This underpinned the creation of the Fire Protection Accreditation Scheme (FPAS) in the areas of design, certification, routine service and annual assessment. The benefits of this scheme are clear: practitioners are now provided with a pathway to become qualified, insured and trusted representatives of the industry.

The recognition of FPAS in NSW under the Building and Development Certifiers Regulation 2020 as the accepted evidence of competence for fire safety practitioners, is a pivotal achievement for the Association. Mr Williams’s tenure led to an expansion of technical resources to support the industry, in the form of new Good Practice Guides and information bulletins, with the purpose of becoming the pre-eminent source of fire protection information.

In the education and training space, FPA Australia oversaw an increase in student numbers training with its Registered Training Organisation and negotiated an agreement with Fire and Rescue NSW to open up the Fire Protection Training Academy at its Orchard Hills facility.

None of this would have been possible without the Association’s team, which was capable and equipped to deliver on the strategic goals of the Board and Executive.

Mr Williams’s leadership has allowed the Association to position the fire protection industry as vital to the economic and physical wellbeing of the community, protecting people and property alike.

The Board and staff of FPA Australia thank Mr Williams for his leadership and contribution, and wish him well for his future endeavours.
NEW WAY FORWARD FOR BUSHFIRE SIMULATION

The AFAC National Council has endorsed the Fire Prediction Services Ltd (FPS) strategy for building a national simulator capability based on the CSIRO Spark system. Council noted the work by FPS over the last year, which included documentation of agency business requirements, consideration of the options for building a next-generational bushfire simulation capability, and a cost–benefit analysis.

After detailed analysis, the FPS Board concluded that a staged approach incorporating a broader cross-section of agency voices to reflect the importance of bushfire simulation were developed with CSIRO Spark is the most capable, independent review of available fire simulation systems. The project included a revision of the training framework and the Fire Aviation Training and Assessment Framework (FATAF), originally created in 2011, to reflect a fast-changing operational and regulatory environment, accommodate new science as it became available, and maintain compatibility with the Nationally Recognised Training (NRT) framework. The Commissioners and Chief Officers Strategic Committee endorsed a three-step plan for improving aviation simulation across jurisdictions.

Agency business requirements for bushfire simulation were developed in close consultation with the AFAC Predictive Services Group. The business requirements describe many important features for a next-generation bushfire simulator, including:
- consistency with new Australian Fire Danger Rating System
- fire-atmosphere feedbacks that had such an impact on fire behaviour last summer
- delivery of new products, such as fire prediction maps to support public warnings
- consistent operation over the whole landscape and across jurisdictional boundaries
- the flexibility to evolve and incorporate new science as it is developed.

FPS commissioned a detailed independent review of available fire simulation systems. The review evaluated code quality, testing infrastructure, reliability, architecture and the potential to meet business requirements. It concluded that the Spark fire simulator, redeveloped over the last year by CSIRO Data61, had the right architecture to form a solid basis for a new national simulator capability.

To help guide decisions about the value of investing in better fire predictions, FPS commissioned a cost–benefit analysis of bushfire simulation. The analysis included four case studies supplied by fire agencies to better quantify benefits. It took a very conservative approach, making cautious estimates of benefits and pessimistic estimates of costs. Although restricted to a small selection of benefits, where reasonable data exists and excluding many hard-to-quantify benefits, the analysis still found benefits outweighed the costs by at least 10 to 30 times.

Council has now endorsed the way forward. The business requirements have described the target, and the cost–benefit analysis has reinforced the value of investing in improving bushfire simulators.

For further information, please contact John Bally at john.bally@firepredictionservices.com.au.

EXCELLENCE IN CRC RESEARCH NATIONALLY RECOGNISED

Research conducted by the Bushfire and Natural Hazards CRC and AFAC welcomes the recent announcement from the Australian Government to continue funding national hazards research in Australia by investing AU$881 M over the next ten years. According to the government “the funding will support the transition of the current Bushfire and Natural Hazards CRC to a new, world class research centre for natural hazard resilience and disaster risk reduction.”

“This will continue the coordinated national research effort of the last 18 years and address the major challenges arising from the 2019–20 bushfire season,” said Dr Katherine Woottothrop AO, FTSE, Chair of the Bushfire and Natural Hazards CRC.

“AFAC has worked with researchers over the last 17 years to provide world-class, independent research designed to improve practice and safety for fire and emergency personnel and Australian communities,” AFAC CEO Stuart Ellis said.

“Now, this new CRC, backed by the Australian Government, will ensure that the high-quality research continues to be delivered in order to support a safer and more resilient Australia.”

RESEARCH FUNDING WILL IMPROVE RESILIENCE TO NATURAL HAZARDS

The case for change was approved by the Bushfire and Natural Hazards CRC and AFAC to make an impact all around Australia and has recently been recognised with multiple awards.

Two CRC projects were recently acknowledged at the annual Emergency Modelling and Public Awareness (EMPA) awards for 2020. The research was led by Dr Paula Dobson and her team at Queensland University of Technology. Associate Professor Dominique Greer, Professor Viorela Tapanes and Dr Sophie Miller. This provides clear evidence of conflicting cues that affect decision-making during a natural hazard.

Highly commended by EMPA was research on the set of experiences and emotions of State Emergency Services (SES) volunteers. Led by Dr Darja Kragt from the University of Western Australia, this research offers specific lessons from emergency services agencies about what works to minimise the negative social, physical and economic consequences of conflicting cues that affect decision-making during a natural hazard.

AFAC has worked with researchers over the last 17 years to provide world-class, independent research designed to improve practice and safety for fire and emergency personnel and Australian communities,“ AFAC CEO Stuart Ellis said. “This funding commitment will support our focus on ensuring research is useful, usable and utilised by fire and emergency services.”

As part of the announcement the Bushfire and Natural Hazards CRC will receive AU$2 M to immediately investigate key issues from the 2019–20 bushfire season. Dr. The new centre will be established over the next 12 months, led by the CRC, AFAC, CRCSP, Emergency Management Australia and the Department of Industry, Science, Energy and Resources.

AFAC would like to acknowledge the work of Dr Barbara Ryan, Inspector-General Emergency Management—Western Australia, Dr Kim Johnston, Prof Maureen Taylor.
EVALUATING THE IMPACTS OF THE CRC

SGS found that for every dollar invested in the CRC, six dollars of benefit is received by end-user partners – reducing loss of life and injury, reducing government costs, and reducing insurable losses. This economic return of six dollars is expected to deliver a total benefit of $513 million over the 15-year period of 2013–14 to 2027–28.

The report also found that as a large, independent and trusted institution, the CRC delivers reliable, necessary and unbiased information in an efficient manner for a range of end-users. Its trusted advice enables collaboration and the education of experts from a range of fields, building a network of knowledge. SGS also noted that as a creator of higher impact and new research, the CRC delivers information, products, services and tools that drive better decision-making, behavioural changes in the community, and improved disaster recovery.


Benefits of the Bushfire and Natural Hazards CRC

Australian communities are greatly benefitting from eight years of research into the response, recovery and mitigation of natural hazards, an independent report found. SGS Economics & Planning (SGS) were commissioned to undertake an evaluation of the value delivered by the Bushfire and Natural Hazards CRC since its inception in 2013. The results of the study are presented in an Independent report outlining the many and varied benefits of the CRC’s research to the Australian community.

For every $1 invested in natural hazards research, $6 is saved.

Through reducing loss of life and money.

Reducing government costs.

Reducing insurable losses.

$513 million

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News

ISSUE THREE 2020

Evaluating the impacts of the CRC

Fire Protection Industry Awards to move

In light of the uncertainty surrounding the COVID-19 pandemic, Fire Protection Association Australia (FPA Australia) has made the difficult decision to postpone the 2020 Fire Protection Industry Awards.

As a result, the Awards Gala has been rescheduled for 2021 and will now merge with next year’s Fire Australia Conference to be held in Melbourne 18–20 May 2021.

FPA Australia believes the decision to amalgamate the two events will help to invigorate the Fire Protection Industry Awards Gala, with a bigger event that showcases the outstanding achievements of fire protection professionals to an even larger audience.

While this has unquestionably been a difficult decision to make, the Association has to put the safety of patrons first.

All Association members will be notified before award nominations open for the 2021 event.

The Board and staff of FPA Australia look forward to seeing all attendees at the new format Awards Gala and Fire Australia 2021.

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FPAS RECEIVES FORMAL RECOGNITION

On 1 July 2020, Fire Protection Association Australia’s (FPA Australia) Fire Protection Accreditation Scheme (FPAS) was recognised by the NSW Government. The Secretary of the NSW Department of Customer Service, Emma Hogan, sent a letter approving FPAS for accreditation under clause 59 of the Building and Development Certifiers Act 2018. The approval of FPAS by the Government is an example of the benefits of co-regulation and is the culmination of almost three years’ work. It is an important step towards a more professional fire protection industry that provides greater certainty for the community.

The order by the Secretary means that the following professionals must be accredited through FPAS:
- Designers who endorse plans and specifications for fire detection systems, fire sprinkler systems, or hydrants (and who are not registered as a C8 or C14 through the Department’s own certifier registration)
- Practitioners who perform annual assessments of essential fire safety systems. Anybody carrying out such work who is not accredited will be in breach of the law.
- No change has been made to the design of mechanical air handling systems – practitioners carrying out such work must continue to demonstrate their competence to building certifiers.

For clients, the announcement will mean that clients will know that the people they use have insurance and have signed a code of practice, giving them confidence that the industry is adhering to a set of ethical standards. The recognition of FPAS is a welcome development that will help to resolve many of the industry’s perceived problems, and return certainty to the community.

FPAS appreciates the support of the NSW Government and thanks all of those who have helped the accreditation to be recognised.

NEW BUILDING AND DEVELOPMENT CERTIFIERS REGULATION 2020

The Building and Development Certifier Act 2018 and the Building and Development Certifiers Regulation 2020 commenced on 1 July 2020, to help industry adjust to the new requirements. These replace the existing Building Professionals Act 2005 and Building Professionals Regulation 2007. They also make changes to various other statutes, including the Environmental Planning and Assessment Act 1979 (EPAA) and the Environmental Planning and Assessment Regulation 2000 (EPAR).

The new regulation:
- Prescribes the qualifications, skills and experience needed to register.
- Clarifies certifiers’ roles and responsibilities with a Code of Conduct that sets professional standards and gives certainty around conflicts of interest.
- Protects consumers better by strengthening contract requirements for certification work.
- Establishes a new accreditation authority framework to formalise the regulation of regulated work, including the work of competent fire safety practitioners (CFSP).
- Strengthens compliance and enforcement through more penalty notice offences that better target breaches of the legislation.

The legislation moves some of the functions currently performed by the Department of Customer Services, but detailed under the Environmental Planning and Assessment Act and Regulation, to a statute that is directly managed by the Department.

While many practitioners will see only minimal changes, the legislation does change some key terminology. For example, as of 1 July 2020, CFSPs will now be referred to as accredited practitioners (fire safety). This change will not affect the role of the CFSP, who will still be required to deliver regulated work under the EPAA and EPAR, nor will it affect the recognition of accreditation under the Fire Protection Accreditation Scheme.

NEW CPD COURSES TO BUILD INDUSTRY UNDERSTANDING

The Australian Building Codes Board (ABCB) has announced that new National Construction Code (NCC) courses into continuing professional development (CPD) will be launching in mid-late 2020. As part of the ABCB’s initial response to the Building Confidence Report, these courses are being developed in partnership with industry, government and subject matter experts. This will ensure that course topics are relevant and of the highest priority for practitioners.

The courses will be developed to suit all relevant building and plumbing practitioners, from designers to installers and certifiers—this includes fire protection practitioners. They are designed to help practitioners deepen their understanding and effective application of NCC requirements.

The ABCB contracted online training provider, Pointsbuild, to deliver affordable courses using a mix of video and audio learning tools, allowing practitioners to complete them in their own time and place. This will be especially helpful for professionals navigating some of the current challenges around face-to-face gatherings and state and regional travel restrictions.

For more information about FPAS, please contact us at fpas@fpaa.com.au or (03) 8892 3131.

To find out more and subscribe for updates on course availability, visit cpd.abcb.gov.au/info.
AUSTRALIAN FIRE DANGER RATING SYSTEM

Extensive and rigorous social research conducted in 2018–19 in all Australian jurisdictions indicated that people find the current fire danger rating system difficult to understand, and often do not take appropriate action in response to fire danger ratings. The research recommended that a simplified framework. The design of the AFDRS fire danger rating four, and using the new levels to inform the current fire danger rating levels to just (AFDRS) Board endorsed the social research findings. This included reducing the current fire danger rating levels to just four, and using the new levels to inform the design of the AFDRS fire danger rating framework.

In April 2020, the AFDRS Board reflected on observations and learnings from the 2019–20 summer bushfires on the proposed AFDRS design. The Board reaffirmed their previous decision to implement the public-facing design in line with the social research findings. This was subject to confirmation that four levels would still allow for appropriately nuanced messaging to produce the desired community safety outcomes. The Board requested the community messaging working group to review and provide advice. The look-and-feel design of two web portals—the Fuel State Editor and the Fire Danger Viewer—has now been finalised, tested and endorsed by the Board.

The back-end server system is being developed by Geoplot, the commercial partner for web portal modules. The other two modules of the system build—Fire Danger Rating Calculations and Seasonal Outlooks—are being developed by the Bureau of Meteorology.

Updated fire danger rating products, such as rating tables and incident weather forecasts, are also being developed by the Bureau of Meteorology. The updated products will be reviewed by the AFAC Predictive Services Group’s operations working group in coming months.

The prototype for ignition, suppression and impact indices project is well underway, with the design overview being considered by the Board. The research prototype is due to be built and tested over the 2020–21 fire season.

40:40:20 – BALANCING THE GENDER RATIO

Participation in AFAC’s Collaboration Groups is a key talent development opportunity for fire and emergency service professionals. AFAC has launched the 40:40:20 campaign to achieve gender balance across the network. The campaign aims to see 40 percent of groups comprised of women, 40 percent men, and 20 percent either or non-identified. The campaign supports the Male Champions of Change (MCC) Fire and Emergency Group’s commitment to increase women’s representation as chairs and members of AFAC Collaboration Groups to 40 percent by the end of 2020. The MCC Fire and Emergency Group identified development opportunities, such as participating in AFAC Collaboration Groups, as key to improving the diversity of our workforce. AFAC recognises that building a more gender-diverse organisation will build overall capability. Feedback sourced through the MCC Fire and Emergency Group in 2017 found that operational and technical experience were prioritised over a wider set of skills, and noted that opportunities were directed to ‘like’ talent rather than ‘diverse’ talent. The 40:40:20 campaign actively and intentionally promotes women’s participation so they are not inadvertently excluded from roles and opportunities. Increasing gender balance in AFAC Collaboration Groups aims to reduce the likelihood of known or unknown biases impeding professional development. AFAC CEO Stuart Ellis said the increasing demands on the fire and emergency service professionals and the shifting nature of their work required a broader talent pool.

“We firmly believe that attracting more women and tapping into new and different skills will be fundamental to meeting Australia’s fire and emergency prevention, preparedness, incident response and recovery needs into the future,” he said.

AFAC Collaboration Groups are tracking positively toward the 40:40:20 goal, with a year-on-year increase of women’s representation or reaching the 40 percent target. Overall, women’s participation is currently at 29 percent, compared to 24 percent in 2019 and 19 percent in 2018. 

For more information see the MCC Fire and Emergency Group website: https://malechampionsofchange.org/groups/male-champions-change-fire-emergency/

AFFAC20 CONFERENCE AND EXHIBITION POSTPONED

Earlier in the year, the AFAC Conference team continued to make a firm decision in early May about whether AFAC20 powered by INTERSCHUTZ could continue, given the COVID-19 pandemic. Following consultation with our key stakeholders, it is with deep regret that we announce that AFAC20 powered by INTERSCHUTZ, which was scheduled for 25–28 August in Adelaide, will be postponed. Instead, AFAC21 powered by INTERSCHUTZ will run from 17–20 August 2021 at the ICC Sydney.

Full details of the conference will be available in due course. We are still committed to bringing our award-winning event to South Australia, and are pleased to announce that we will return to Adelaide in 2022. We look forward to working with our host agencies to plan a world-class conference and exhibition. Thank you for your understanding and your continued support and commitment to the AFAC Conference. Stay safe and we look forward to welcoming you all to AFAC21 in Sydney.

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A new AFAC publication, Prescribed burning in Australasia: the science, practice and politics of burning the bush is evolving the national conversation about the use of fire in land management.

Alana Beitz

As the Black Summer bushfires threatened multiple communities across Australia, the debate over prescribed burning raged in the media and divided public opinion.

A new book published by AFAC—in partnership with the Centre of Excellence for Prescribed Burning and Forest Fire Management Group—explores the ecological, cultural and economic benefits of prescribed burning.

Prescribed burning in Australasia: the science, practice and politics of burning the bush features contributions from more than 50 authors to reflect the diversity, complexity and scope of bushfire knowledge. It moves beyond the question of ‘to burn or not to burn’ and sparks a more holistic conversation about fire as a tool for the Australian landscape.

The book was launched on 28 May via an online event. Special guests at the launch were Commissioner Shane Fitzsimmons, Resilience NSW; Prescribed burning in Australasia lead editor, Dr Adam Leavesley, ACT Parks and Conservation Service; and contributing authors Professor Sarah Legge and Emeritus Professor Steve Dovers.

“Prescribed burning is complex. It is not risk free and it involves complex planning that has to consider a diverse range of perspectives, as well as emerging science and practical knowledge,” Commissioner Fitzsimmons said at the launch.

“This book broadens the discussion away from just hazard reduction burning and appropriately considers cultural, ecological and economic objectives to burning. The book is unique, as it gives a voice to agency and practitioner knowledge and perspectives, as well as work from academia and science.”

With a focus on bushfire management and research utilisation, Dr Leavesley acknowledged that a conversation about land management was not complete without considering the people who inhabit and depend upon that land.

“The original idea of the book was that we would review the science, the technical knowledge about fire behaviour, fuel and ecology that’s needed to run the kind of sophisticated burning programs which the community expects of us,” he said.

A prescribed burn in a paddock forest moving in the opposite direction to the light wind, consuming the litter fuel.

“Several of the things that have come out of research in the past decade is that people are central to bushfire management, and especially prescribed burning programs. We hope this will help to form the foundation for a society that is more at ease with prescribed burning and less fearful of bushfires.”

Divided community perception of fire and prescribed burning is a persistent challenge for fire practitioners, land managers and policymakers. In his role as Director of the Fenner School of Environment and Society at the Australian National University, Emeritus Prof Dovers said the emails he received about fire management were “the most passionate, sometimes inflammatory.”

“Fire management seems to generate a particular intensity of opinion,” he said at the online book launch. “It is the hottest of hot topics. But I don’t think it is about different interpretations of the science; there is something about fire and prescribed burning that really does lead to bitter debates at times.”

“The extreme arguments tend to ignore things like aesthetic appeal of settlement, housing affordability, impacts on tourism, health impacts, aggression and stress for suppression, land use planning, other ways of reducing fuels, firefighter safety—all sorts of other issues.”

Emeritus Prof Dovers commended his co-authors from swaying away from the extremes and presenting a balanced consideration of both the benefits and challenges of prescribed burning.

“I got a lot of feedback from both the extremes, but strangely not much from people in the middle. And that’s where this book comes in… I recommend people read the chapters that they might not agree with or are unfamiliar with, before they read the ones they know they agree with.”

Prof Legge agreed that there are many objectives to prescribed burning, which leads to a diversity of opinions. But the objectives are not always at odds with each other.

“North Australian fire management is a great example of finding a sweet spot where prescribed burning does deliver on multiple objectives,” she explained.

“In the north, the enabler for large-scale burning programs has been emissions abatement, not the carbon economy. Although the enabler is economic, the outcomes of prescribed burning are much more diverse—they include benefits to pastoral production, assets like fences don’t get as damaged, there’s more grass for cows through the year, benefits to cultural maintenance and well-being, and benefits to biodiversity.”

Prof Legge concluded that although large parts of Australia had been severely impacted by bushfire during the 2019-20 season, fire is an integral part of the Australian landscape that communities must learn to work with, not against.

“There is a danger with events such as the recent bushfire disaster that people will think of fire as an enemy. As horrific as that event has been, we still need to embrace the complexity of fire, because fire is part of Australia’s ecology and part of our culture,” she said.

Prescribed burning in Australasia supports the path forward by presenting the science, evidence and expert opinion around the use of prescribed burning across three themes, edited by Dr Leavesley, Mr Mike Wouters and Dr Richard Thornton.

“The book covers a wide range of issues centred around prescribed burning.

* Different things to different people sets out the social context of burning in Australia: policy-setting, social and cultural concepts of place, and the role and limitations of academic research.

* Evidence-led objectives looks at the significance of effects of prescribed burning, with in-depth reviews of fuel hazard reduction and its effectiveness, forest carbon, water supply, biodiversity and escapes.

* Expert opinions presents competing views among leading experts, practitioners and policy-makers about how fire should be used in the landscape.

Prescribed burning in Australasia is available now via the AFAC Shop: www.afac.org.au.au/ shop/product?ID=19417

The online book launch is also available to view on the Centre of Excellence for Prescribed Burning YouTube channel: https://youtu.be/ GjkHc0OHoAl
A low-intensity prescribed burn removing leaf litter and debris from the ground. PHOTO: MARTA YEBRA

FIGHTING FIRE WITH FIRE

Australia’s devastating 2019–20 bushfire season thrust the debate about prescribed burning back into the national conversation. A webinar series in May delved into the complexities of the issue.

BY BETHANY PATCH

Since the devastating 2019–20 bushfire season and subsequent Royal Commission into National Natural Disaster Arrangements, an inclusive national discussion about the science and effectiveness of prescribed burning has become more urgent.

Across three weeks in May, the Bushfire and Natural Hazards CRC and the Australian Academy of Science invited leading figures in bushfire science and knowledge to discuss the issues around prescribed burning in a National Fire Fuels Science webinar series.

The aim of the series was to provide scientific knowledge to the national Royal Commission and various state-based inquiries, explained Dr Richard Thornton, CEO of the CRC.

“The complexity of fire and land management, and prescribed burning, continues to grow,” he said. “We wanted to cover some of the issues and debate the science with leading practitioners and researchers to determine the state of prescribed burning knowledge—what is known, what is unknown, what is in agreement and where we need more research.”

There is broad agreement that prescribed burning reduces the impacts of bushfires—which destroy lives, property and ecosystems. However, there are several complex perspectives about the nature, science and application of prescribed burning, which this series sought to clarify.

The first session outlined some of the key issues that make prescribed burning so difficult and divisive. Dr Sarah Harris (Country Fire Authority) covered impacts of climate change, while Ms Sascha Rundle (ABC Emergency Broadcasting) highlighted the diverse public perspectives in the media. Mr Oliver Costello (Firesticks Alliance) explained the benefits of Indigenous cultural burning, and Mr Justin Leonard (CSIRO) discussed housing survival during bushfire.

Touching on the integration with Indigenous cultural burning, Mr Costello said that we now have an important opportunity to collaborate and consider how we manage our human needs alongside the needs of our landscapes.

“We need to enable and empower all local people, particularly Aboriginal custodians, to be active managers in their landscape so we can prevent future impacts in coming fire seasons,” he said.

The second session dug deeper into the science of prescribed burning—what we know and what we do not know. Dr Neil Burrows, a longtime fire scientist and land manager in Western Australia, provided support for evidence, and Professor Mike Clarke (La Trobe University) discussed the relationship between planned burns and bushfire risk.

Associate Professor Tina Bell (University of Sydney and the CRC) covered the influence of burning on carbon and water. Dr Phil Zylstra (Curtin University) spoke about the relationship between the rate of fire spread and vegetation, and Professor Mark Adams (Rydeburn University of Technology) outlined key complications of leaf litter and fire fuels.

Dr Burrows reiterated the importance of aligning scientific knowledge with land management practices.

“Scientists need to work closely with land managers and fire management agencies to help us work our way through this,” he said.

Prof Clarke reminded the audience that no single model of prescribed burning can be applied to all ecosystems, which makes it particularly difficult in an ever-changing climate.

“Drought conditions in this past savage summer have shown us that previously non-combustible plant fire masses become combustible,” he said. “Firefighters are reporting places burning that we haven’t seen burning in the past—rainforest gullies, damp mountain tops—on landscape scales. This is really challenging territory as we see an increase in the extent, frequency and severity of droughts.”

The third session elaborated on the potentials and limitations of prescribed burning in practice. Dr Adam Leavely (ACT Parks and Conservation Service) provided practical examples of bushfire suppression, with Dr Valerie Denmore (WA Department of Biodiversity, Conservation and Attractions) outlining the impact of fuel moisture on prescribed burns. Ms Ruth Ryan (HVP Plantations) discussed the need for better sociocultural risk modeling, while Dr Simon Hoornstra (NSW Rural Fire Service) explained the importance of research from an emergency services point of view.

To conclude the series, webinar host Mr Gary Morgan reminded everyone that there is no panacea for bushfires, and prevention should come in different forms.

“Prescribed burning is not just about protecting human lives and their assets, but also about managing biodiversity and protecting our soils and water courses,” he said. “We know enough now to start applying the knowledge from current and past research, and applying it using adaptive management.”

Dr Thornton said the high engagement across the webinars demonstrated the need for continued and wide-ranging public discussion of prescribed burning.

“We’ve really only started to touch on the complexity of issues, with so many thoughts, opinions, views, values and lives at stake across the communities. It really underlines the importance of a multi-disciplinary approach to the issue.”

The recorded webinars, presentation slides, audience questions and follow-up videos are now available at bnhcrc.com.au/2020/firefuels.

“Firefighters are reporting places burning that we haven’t seen burning in the past—rainforest gullies, damp mountain tops—on landscape scales. This is really challenging territory as we see an increase in the extent, frequency and severity of drought.”

— Prof Mike Clarke

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NAVIGATING THE HFC PHASE-DOWN
HOW THE FIRE PROTECTION INDUSTRY STANDS TO BE AFFECTED

There are 21 million reasons why the phase-down of hydrofluorocarbons is a good thing for Australia’s greenhouse gas emissions.

by PATRICK TANSEY
Fire Protection Industry (GSI & SID) Board

S
ince the mid-1990s, hydrofluorocarbons (HFCs) have been a critical asset for the protection companies in Australia and abroad. HFCs are commonly used in a range of fire protection applications, such as telecommunications facilities, computer rooms, data centres, process control centres, military vehicles, aircraft, museums, archive vaults for document storage, and other electronic facilities.

While historically used in refrigeration and air-conditioning equipment, the fire protection industry eventually realised the potential of HFCs to replace halon. Once halon was outlawed by the Australian Government in 1995 (barring essential use exemptions), HFCs were introduced as a replacement for Halon 1301. But as we begin a new decade, the ways in which the fire protection industry continues to use HFCs will gradually start to change.

The Kigali Amendment to the Montreal Protocol

In October 2016, representatives from Montreal Protocol (GSI & SID) Board

In October 2016, representatives from 87 of the 198 countries party to the Montreal Protocol had ratified the Kigali Amendment. Australia joined the United States, Europe and Japan by taking early action on HFCs, legally introducing the agreement one year before the international agreement kicked in.

In many respects, the HFC phase-down is a monumental piece of legislation—arguably the most significant amendment to the Montreal Protocol since the chlorofluorocarbon (CFC) and halon phase-out was agreed to in 1990.

Reducing emissions through phase-down

The primary function of the HFC phase-down is clear: to reduce greenhouse gas emissions. The global phase-down is expected to help facilitate the phase-down. A HFC quota is allocated to eligible importers of bulk HFCs for each two-year quota allocation period. Subject to meeting all legislative requirements, those importers will be able to import up to the amount of quota allocated to them. The quota is expressed in carbon dioxide equivalent (CO2e) megatonnes (million tonnes).

With the intentions of the phase-down clear, what is more of an unknown is the impact it will have on the reptile of industry stakeholders it directly affects. Bulk gas importers are set to be more immediately affected by the phase-down. Others will include fire technicians, HFC equipment retailers and of course, consumers.

According to the DAWE, the need for change in Australia was driven by industry leaders. “The proposal for a HFC phase-down came from industry,” a DAWE spokesperson said. “It was first suggested in 2007 and was discussed in detail in the 2014–16 review of the Ozone Protection and Synthetic Greenhouse Gas Program.”

“The fire protection industry and other industry stakeholders provided input to the review and the design of the HFC phase-down throughout the review period. This included representation on a technical reference group that informed discussions on the program review, open stakeholder meetings to provide information and receive feedback, and the opportunity to provide written comment on options papers,” the spokesperson added.

Industry challenges

One company that could be affected down the line by the HFC phase-down is A-Gas, an international group that imports bulk HFC-227ea (commercially known as FM200) under the quota system.

A-Gas Australia Global Technical Manager, Ms Elvira Nigido, said while the group’s primary business is to service the refrigerants and air-conditioning market in Australia, the phase-down may affect their willingness to continue importing.

“We continue to source and supply HFC-227ea in future will obviously depend on market demand and how our quota is impacted by the demand of other HFCs used in refrigeration, air conditioning, and fire protection, and their respective global warming potentials (GWP),” Ms Nigido said.

HFC alternatives

While there will be some challenges for industry to navigate as HFC quota is reduced, the silver lining is that it will force product developers to consider cleaner alternatives—a critical prerogative of Kigali Agreement.

The primary function of the HFC phase-down is clear: to reduce greenhouse gas emissions. The global phase-down is expected to reduce HFC emissions equivalent to 72 billion tonnes of carbon dioxide by 2050, or the equivalent of well over one year’s total greenhouse gas emissions.
Ms Nigdo added that industries’ willingness to transition from HFCs to less environmentally damaging chemicals is dependent on a number of factors. “The age of the fire protection system, availability of product to recharge equipment and availability, and suitability of alternatives to provide the necessary level of fire protection to protect the assets will all be key considerations,” she said.

One of the most promising HFC alternatives currently on the market with zero or low global warming potential is fluoroketone. A range of other inert gases, such as Novec 1230, IG-01 (argon), IG-100 (nitrogen), IG-65 (nitrogen and argon) and IG-641 (nitrogen, argon and CO₂), are also proving to be suitable alternatives.

While the environmental benefits of adopting cleaner technologies are obvious, some commercial considerations may prevent the implementation of greener agents. Inert gas systems can be relatively expensive, which may present a commercial barrier to wider deployment of such systems. Another factor is application suitability. For example, while Novec 1230 is a commonly used replacement for HFCs in fire protection systems, inert gas systems containing Novec 1230 are heavier and can take 60 seconds to discharge, compared with 10 seconds for HFC systems.

According to a 2014 report commissioned by the DAWE and carried out by an Expert Group, it is believed the majority of applications currently using HFCs will migrate to new systems, such as inert gases, and high GWP import demand will decline to around 20 tonnes of HFC-227ea by 2025. Despite the reduction of quota as we move towards 2036, the DAWE does not anticipate Australian industries will face major obstacles when moving away from HFCs. “Alternatives are already available for many applications and the transition is already complete for some,” a DAWE spokesperson said.

Much like banning the use of halon in 1995 forced the fire protection industry to begin developing alternative agents, the gradual reduction of FM200 quota may advance the development of new technologies that are not synthetic greenhouse gases and therefore do not harm the environment.
Au

ustralians are always learning to live with a changing, unpredictable and uncertain environment, of which natural hazards are an increasing part. We are all developing ways to cope with, adapt to and recover from changes in our lives. But how does your community adapt and respond to change, and how can this process be improved? What resources does your community have at its disposal when responding to a natural hazard? And how can these be transformed so that your community recovers more easily and quickly, and adapts its resources effectively to be better prepared next time?

Ms Suellen Flint, the Deputy State Recovery Coordinator at the Department of Fire and Emergency Services (WA) explains what makes a resilient community.

“At their best, communities are prepared, are able to adapt to changing situations, are connected to each other and are self-reliant,” said Ms Flint.

An understanding of disaster resilience focuses on ways that we can improve a community’s chance of adapting to future change, rather than focusing on its ability to react to hazards that have already occurred.

To support resilience across Australia, a new research-based website—the Australian Disaster Resilience Index—has been developed by the Bushfire and Natural Hazards CRC and the University of New England.

The Index is open to anyone with an interest in understanding the resilience of their local community.

What does the Australian Disaster Resilience Index do?
The output of six years of CRC research, the Index provides a clear, detailed pathway to better understanding and measuring resilience across Australia.

Businesses, governments, not-for-profits and community organisations can use it to improve their planning, development, policy, engagement and risk assessment.

“The Index is capturing a national picture of disaster resilience,” said lead researcher Dr Melissa Parsons from the University of New England. “This national picture will help communities, governments and organisations further develop the capacities for adapting and coping with natural hazards.”

The Index gives you everything you need to start exploring the resilience of your community. It includes an interactive map that generates data reports for specific areas, and information about the strengths and barriers to disaster resilience for each area. You can examine the resilience of your local community and start to plan for improved resilience.

The Index measures overall disaster resilience, as well as coping and adaptive capacity by assessing eight key factors under two broad groups: adaptive capacity and coping capacity.

Coping capacity is the means by which people or organisations can use available resources and abilities to face a hazard that could lead to a disaster.

For example, if a community has high levels of economic capital, plenty of emergency services to use and good access to information, it has high coping capacity.

Adaptive capacity measures the arrangements and processes in place in the community to enable adjustment through learning, adaptation and transformation. For example, if a community has strong community engagement and governance, it has high adaptive capacity.

The coping capacity factors are:
- social character (the social and demographic characteristics of the community)
- economic capital (the economic characteristics of the community)
- emergency services (the presence and resourcing of emergency services)
- planning and the built environment (the presence of legislation, plans, structures or codes to protect communities and their built environment)
- community capital (the cohesion and connectedness of the community)
- information access (the potential for communities to engage with natural hazard information).

The Australian Disaster Resilience Index can be used to assess disaster resilience of local government areas.
The adaptive capacity factors are:
- social and community engagement (the capacity within communities to adaptively learn and transform in the face of complex change)
- governance and leadership (the capacity within organisations to adaptively learn, review and adjust policies and procedures, or to transform organisational practices).

Dr Parsons and her team have assessed these factors in each community and combined them to determine whether each community has high, moderate or low coping or adaptive capacity for resilience.

Applying an understanding of disaster resilience
Not all Australian communities have the same capacity for resilience given the many social, economic and institutional factors that play a role. In fact, not even all communities within one area have the same level of resilience.

This cross-community mosaic of resilience within larger areas can be used to identify strengths, alliances and develop targeted improvements.

Once you can identify areas similar to where you live, you can start looking at what those areas have done to improve their resilience, and assessing whether a similar approach will work for your community.

This also allows the opportunity for an open dialogue with other resilience partners, and the coordination of resilience-building initiatives and sharing of resources between local government areas.

The future of disaster resilience
The Index sets a new benchmark for measuring future changes in resilience to natural hazards and promoting resilience building initiatives. By informing and supporting leaders in Australian organisations to better understand and assess resilience, those organisations will be able to improve how they support communities before, during and after a natural hazard, thereby building a more disaster-resistant country.

While the Index can be specifically applied to fire and emergency services, it will also be of great value for business and industry, not for profit organisations, and local, state and federal governments. It will be used to inform policy, resource planning, community profiling, strategic planning, emergency planning and preparedness, risk assessment and other crucial processes.

Ms Flint emphasised the importance of the Index for the emergency management sector.

“The ability to identify hotspots of high and low disaster resilience in Australia, and identify areas of strength in coping and adaptive capacity [...] will help not only to embed disaster resilience into policy and legislation, but also to lead to an increase in shared responsibility and resilience across Australia,” she said.

Explore the Australian Disaster Resilience Index at add.Index.org.au.

Australia has a history of high-consequence natural hazards, such as bushfires, cyclones, floods, storms and extreme heat. Land use planning that considers natural hazard risk is the most important mitigation measure in minimising future disaster losses in areas of new development.

The Australian Disaster Resilience Index provides a snapshot of disaster resilience across Australia.
AUSTRALIA’S LEADING FIRE PROTECTION PARTNER

We help our customers manage the compliance of 1 in 5 buildings Australia-wide, with over 2000 technicians in the field using our product every day. Our modern fire protection maintenance software helps Australian businesses, both big and small, grow faster.

SMART TOOLS TO SUPERCHARGE YOUR MAINTENANCE BUSINESS

✔ Built-in AS1851 Standards: get started in minutes
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✔ Subcontractor App: share work and stop manual data entry
✔ Real-time App: work online or offline with no manual syncing
✔ Sales Quoting CRM: win more customers

KEEP YOUR COMPLIANCE DATA SAFE WITH DIGITAL LOGBOOKS

An easy to use app designed for the Australian fire protection industry, Logbooks by Uptick adheres to Australian Safety Standards AS1851 - 2012 and uses cloud-based storage to protect critical data.

✔ Protect the environment and reduce paper waste
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DOWNLOAD THE APP: it’s free!
The onset of the coronavirus pandemic has resulted in significant rethinking by fire protection companies into how they should service clients and keep the community safe.

As the pandemic unfolded, governments increasingly placed restrictions on these businesses to slow the spread of COVID-19, but provided little guidance on what might be an ‘essential’ business.

There was significant concern that fire protection might come to be considered ‘non-essential’. Practitioners were finding that not only were owners and occupiers beginning to prevent them from entering buildings, but employees were starting to express apprehensions about their own safety. This prompted Fire Protection Association Australia (FPA Australia) to write to relevant state and territory ministers to seek support for our industry.

Our opinion is that the routine maintenance of fire protection services is essential because it provides support to legislated essential services, such as the fire brigades, by limiting the spread of fire.

Rethinking service delivery

Ministers declared that businesses not designated ‘non-essential’ could continue to operate, provided that precautions were taken. Having established that the manufacture, design or installation of fire protection systems and routine servicing and assessment, were not deemed ‘non-essential’, companies have had to adjust to new ways of conducting their business.

Shutdowns, restrictions and social distancing have complicated fire protection work. Certain buildings—such as healthcare, aged care or education buildings—are difficult to access, given their vulnerable populations. Residential buildings pose a different conundrum, given the increase in working from home, self-isolation and quarantine.

These factors have resulted in several issues, including unoccupied or underused buildings, restricted access to buildings or parts of buildings, and the need to undertake precautions to protect both practitioners and building occupants from spreading the virus. FPA Australia—like other fire protection associations globally, such as the National Fire Protection Association (USA) and the Fire Industry Association (UK)—have emphasised the importance of continuing to conduct the routine service of fire protection systems and equipment in buildings. Routine servicing ensures that these systems and equipment remain in working order when buildings are occupied again, and will still operate if there is a fire while the building is unoccupied.

Practitioners recognise the financial impacts of the pandemic. Most are working with clients to manage routine service commitments within allowable tolerances under the relevant Australian Standards. However, whether people are there or not, fire systems need to operate to detect fire, suppress fire growth, protect the asset and occupants, and ensure business continuity.

Neglecting these systems could potentially result in property losses that insurers may refuse to cover, in part or in full, because appropriate precautions were not taken.

Even more concerning is the fact that some systems will degrade significantly if not maintained, making it more costly and complicated to reboot them if they are not operational for a period of time. Another consideration is the appearance of diseases such as Legionella, which pose a serious risk to building occupants if systems are not attended to.

The need for negotiation

Fortunately, despite a recent increase in coronavirus cases, routine service work and annual compliance reporting have been able to continue. Early in the pandemic, when the extent of the virus and response was unclear, there was significant concern that building owners and occupiers may not be able to maintain their systems or to comply with regulatory reporting obligations.

Some owners and occupiers resisted fire safety work on the basis that their building was empty or not occupied; others were concerned about the financial impact of the pandemic had affected cash flow. Practitioners could not just walk into buildings and act as they always had—they had to demonstrate sensitivity to these concerns and commit to communication.

Upfront discussions are needed between practitioners, clients, tenants and, sometimes, local authorities, to set the ground rules of fire protection work: what, where and how it will be done, and what precautions will be needed.

With social distancing, better hygiene practices and personal protective gear now a cornerstone of fire safety, companies have focused on providing appropriate support for their teams while delivering for their customers.

Detailed risk and hazard assessments allow them to determine whether it is safe...
Fire protection companies, like all businesses, have had to implement standard risk management procedures. This includes developing procedures for their own workplace, when visiting clients, and for undertaking necessary activities.

To enter and work in a particular location, innovative ways to maintain systems are becoming more important, so that they do not risk exposing clients or colleagues. And changes to schedules to minimise contact with building occupants—such as conducting work outside of normal business hours, or delaying activity under acceptable tolerances—are giving greater flexibility for practitioners. These have been relatively easy changes to implement.

**Simple adjustments**

All parties (employers, employees, building owners, agents and occupiers) have had to adjust their businesses when visiting clients, and for undertaking necessary activities. For example:

- staff briefings on infection control procedures (social distancing, hygiene, cleaning, personal protective equipment (PPE))
- the provision of appropriate supplies of PPE and cleaning materials in the face of significant competition for resources, and
- preparing and implementing Safe Work Method Statements for fire protection work, covering infection prevention and control.

State, territory, and Commonwealth governments are also providing information and support to practitioners and building occupants to understand potential risks and hazards and how to manage them.

**The bottom line**

The last issue facing the fire protection industry in Australia is one felt across all industries—finances. While the impacts of the coronavirus were relatively slow to reveal themselves, practitioners are reporting that clients are finding it increasingly difficult to fund these essential services. Despite government support, many practitioners have declining income and have made the difficult decision to issue redundancies, stand staff down or reduce their hours, or even close the business.

Government initiatives, such as the JobKeeper package, hold some promise, but may not free up resources sufficiently to allow the company to keep operating. Restructures and redeployments can provide some relief, but many companies have not had the flexibility to change their business models.

While some practitioners are stepping in to help existing clients at their own cost, rather than allowing systems to degrade, others are demanding upfront payments for services to ensure that bills are going to be honoured.

The full impact of this is yet to be felt, but it has clearly affected companies both large and small. It is fortunate that the fire protection industry is being considered an essential service, but this has not sheltered many from the adverse impacts of the pandemic.

Associations such as FPA Australia are adopting online options to deliver seminars and training and help practitioners to maintain their skills. Some experienced practitioners are choosing to pay-it-forward in the current adverse impacts of the pandemic.

They also used an online noticeboard to post questions to hazard experts from the AIDR Disaster Mapper and Knowledge Hub resources. They also used an online noticeboard to post questions to hazard experts from the AIDR Disaster Mapper and Knowledge Hub resources.

for their final assessment task, students were provided with a fire scenario and a topographical image of their local area. Using the knowledge and skills developed over the project, students simulated the emergency response or resources on the students’ positive achievements indicate a more holistic understanding of bushfire preparedness and response and skills developed over the project, students simulated the emergency response or resources. This result indicates a more holistic understanding of bushfire preparedness and response among the students.

More information about the pilot project, including course units and students’ projects, is available from the Interactive Disaster Resilience Lesson Program website: www.sites.google.com/view/wpi-aidr-lessons.
The fire On Sunday 18 March 2018, the Reedy Swamp fire broke down upon the communities of Reedy Swamp and Tathra in the Bega Valley Shire on the NSW south coast. The fire destroyed 65 homes and 35 caravans and cabins. Around 700 residents were displaced on the day, as well as an unknown number of tourists and visitors to Tathra. No human lives were lost.

A total fire ban was in place for the area on the day, with the severe fire danger conditions experienced being unprecedented for the area at that time of year.

WHAT WAS FOUND
Community perception of risk before the fire

Many residents within Tathra were not aware of the bushfire risk. People within the town had not considered that a bushfire could affect Tathra, or had not considered the potential for a bushfire to penetrate beyond the forest edge. As such, they had not adequately planned or prepared for bushfire. Residents with properties within or adjoining the forest tended to be more aware of the risks, and were therefore more likely to have taken action to plan or prepare.

What actions people took to prepare

Levels of preparedness varied considerably among residents, with many describing preparation as something that is done when a fire is threatening, rather than actions taken in advance. Some residents appeared to have planned and prepared for last-minute evacuation, while those who had not planned to leave described a last-minute dash around their house, trying to collect items they considered important to take.

How people became aware of the bushfire and how they reacted

Most people became aware of the fire by seeing or smelling smoke, or by communication with relatives, friends, or neighbours. For some residents, knowledge of the fire caused concern and motivated preparatory or protective action. Others noted the presence of the fire but did not believe it was a threat to Tathra, and continued with what they were doing.

Were people able to implement their fire plan?

Most of those who intended to leave were able to do so, but many reflected that they left too late. Some people who had not planned or prepared for bushfire stayed to defend their own and neighbours’ houses. Importantly, most of those who did have a plan were able to implement it.

Information sought about the bushfire and how it was obtained

Many people sought information about the fire through direct observation of smoke, flames and the activities of neighbours and emergency services. The loss of electricity, mobile phone reception and issues relating to the broadcast of emergency information prevented them.”

The fire spotted over parts of Tathra and burnt areas away from the main fire front.

Research into the 2018 Reedy Swamp fire finds that many people consider bushfire preparation as something that is undertaken when directly threatened by fire—not well in advance of an active threat.

By DR JOSH WHITAKER, DR KATHARINE HAYNES, MS CARRIE WILKINSON

The University of Wollongong and the Bushfire and Natural Hazards CRC

AND DR MATALENA TOFA, DR MEL TAYLOR

Macquarie University and the Bushfire and Natural Hazards CRC
How did visitors to the area respond to the bushfire?
A range of local businesses were hosting non-residents when Tathra came under threat. All accommodation providers were able to alert their guests to the bushfire and instructed them to evacuate. Some evacuations occurred while the fire was in Tathra. Mandated evacuation plans and emergency procedures assisted the evacuation process.

Community expectations of warnings and information, particularly in known mobile phone coverage black spots
Most interviewees were aware of the limited mobile phone coverage in the Tathra and Reedy Swamp areas. Some had considered that they might not receive an SMS warning in an emergency while others expected warnings and advice to be provided earlier, before power and communications infrastructure failed. People expected that local media would provide ongoing coverage of emergency warnings and information throughout the fire. Some interviewees suggested that a siren or klaxon should be installed to alert people of an emergency when a destructive bushfire could occur in mid-March. A small number of interviewees discussed their belief that the day of the fire was forecast to be a day of severe fire danger. Others expressed surprise that such a destructive bushfire could occur in mid-March. The effectiveness of warnings and the resulting actions taken
Many did not receive warnings or received warnings late, leading to uncertainty and confusion about whether, when and where to evacuate. Those who received warnings found them useful in confirming the threat posed by the fire and the need to take action. Others who received a warning advising them to seek shelter were unsure what it meant.

Did the time of year influence how people responded?
Some interviewees had been aware that the day of the fire was forecast to be a day of severe fire danger. Others expressed surprise that such a destructive bushfire could occur in mid-March. A small number of interviewees discussed their belief that the day of the fire was forecast to be a day of severe fire danger. Others expressed surprise that such a destructive bushfire could occur in mid-March.

Community experiences in the aftermath of the bushfire
People experienced a range of common issues related to evacuation centres, post-fire communication, media, politicians’ conduct, safety issues, and concerns about the local environment. While most were impressed with the services provided at the evacuation centre, others were uncomfortable with the media presence. People were distressed to find out that their houses had been destroyed via media reports and images, rather than official communication.

How do people intend to plan, prepare and respond to bushfires in the future?
Interviewees reflected on specific changes they would make to their properties. Many who left at the last moment said they would leave earlier in a future bushfire. Those who stayed to defend identified the need for better equipment and resources, and several who evacuated said they would not leave in the future. Interestingly, some said they would remain within the fire-affected area only to avoid the inconvenience of being prevented from returning.

Opportunities to increase community awareness and preparedness
Bushfires like the Reedy Swamp fire present valuable learning opportunities for people in bushfire risk areas. This research presents opportunities to increase awareness and understanding of the risks to coastal communities. Consideration should be given to including experiences and learnings from such fires in community engagement and education materials. The study suggests a need for more education and advice about the dangers of late evacuation and a need for greater dialogue and clarity of warning messages. It also shows the opportunities to increase community awareness and preparedness in built-up areas through clearer communication of the potential for embers to carry fire into these locations—well beyond what many believe to be the interface between forests and houses.

Importantly, community experiences of the devastating 2019–20 fire season are now being studied. This new research presents opportunities to increase awareness and understanding of the risks to coastal communities. Consideration should be given to including experiences and learnings from such fires in community engagement and education materials. The study suggests a need for more education and advice about the dangers of late evacuation and a need for greater dialogue and clarity of warning messages. It also shows the opportunities to increase community awareness and preparedness in built-up areas through clearer communication of the potential for embers to carry fire into these locations—well beyond what many believe to be the interface between forests and houses.

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Recent updates to the Fire Brigade Intervention Model continue to ensure fire brigade activities are reflected in building performance provisions, while delivering the flexibility to incorporate new data and operations.
In response to local and international policy developments in relation to the use of firefighting foams, FPA Australia has released an updated information bulletin to support practitioners.

By MIKE WILLSON
Member, Fire Protection Association Australia

AND IAN FINDLAY
Technical Officer, Fire Protection Association Australia

Firefighting foam continues to be an evolving area in terms of technology and policy, with changes occurring in Australia and globally. The Australian Government is looking at a consistent, nationwide approach to per- and polyfluoralkyl substances (PFAS). The European Chemical Agency is reviewing a German proposal on undecafluorohexanoic acid (PFHxA). And Fire Protection Association Australia’s latest version of Information Bulletin (IB-06) takes into account recent research findings and existing and proposed regulatory positions. It also takes a realistic, practical and holistic risk-based approach to effective firefighting and protecting firefighter safety.

Key changes in version 3 of IB-06

The updated IB-06 also highlights changes and proposed changes to the Stockholm Convention on Persistent Organic Pollutants. The new section also discusses existing and proposed regulations locally and globally.

Locally, it covers Queensland’s Environmental Management of Firefighting Foam Policy and SA’s Environmental Management of Firefighting Foam Policy, and the European Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (E.U.) 2017/1000. Both of these focus on elimination of legacy long-chain C8 PFAS (including PFDA) from manufacturing processes, products and waste streams, including from firefighting foams.

The updated IB-06 also highlights changes and proposed changes to the Stockholm Convention on POPs. This new includes PFDA alongside PFOS, which is already listed, and is working towards adding PFHxS in future.

New research on F3 performance

The NFPA Research Foundation’s report ‘Evaluation of the fire protection effectiveness of fluoro-free firefighting foam’ and the NRL paper ‘Fuel for firefighting foam evaluations: gasoline vs heptane’ have provided important insights into F3s, particularly regarding test fuels and firefighting performance.

The updated IB-06 also highlights changes and proposed changes to the Stockholm Convention on Persistent Organic Pollutants.
Recently, a fire safety assessor reported that he had come to an impasse. A building under his care needed a fire pressure test, but the testing company would not do it without being indemnified, in case the system blew out. The client’s insurer, however, refused to give said indemnity.

The practitioner was stuck. Could he assess the system, knowing the test had not been carried out? If so, what could he say about its performance? What liability did he carry personally? And more importantly, how could he ensure that the council would not find his client— who would most likely blame him for not completing his assessment?

The answer? By choosing his words very carefully, he was able to advise that while the system worked on town water, it had not been pressure tested, and to explain to the client the risks of not proceeding with that testing.

This example is quite informative. On the one hand, nobody wanted to be financially accountable if a system failed. On the other, because of a demarcation dispute, the client and the assessor were faced with a decision that might have ended the lives of occupants, fire brigades and the broader community. What is generally less understood, however, is the value such decisions bring to the community.

Nobody benefits when fire protection is seen solely as a compliance activity. Yet it takes the fire brigade on average around seven to nine minutes to arrive on site. Without effective fire systems in place, tragedy is the most likely result.

A study by Fire and Rescue NSW and theCSIRO in the wake of the 2012 Bankstown apartment fire found that a sprinkler system can effectively suppress a fire for 14 minutes or more, and keep conditions tenable for occupants for a significant period. So, a working sprinkler system is a key factor as to whether a building and its occupants will survive.

Fire safety systems such as these will help to ensure that assets are preserved, businesses can operate, families are not devastated, and the insurance remains affordable.

This benefit is not solely delivered by sprinklers. A fire safety features—wet systems, detection systems, passive features—deliver tangible benefits to the buildings they protect. This inherent value is preserved when owners and managers invest in maintaining their systems and recognise the benefits of effective fire protection.

But to achieve this, we all need to move beyond compliance and recognise that fire safety systems are assets in their own right. Buildings, occupants, and the broader community deserve it. •

This article was previously published in Asia Pacific Fire magazine.
RESOURCE

FLOOD ON THE FIREGROUND

A DAY IN THE LIFE OF AN AMERICAN TASK FORCE IN AUSTRALIA

I’ve seen plenty of flash floods while living in the American south-west, but this flood felt sobering. Water sheeting down charred slopes. Topsoil flowing over roads like slurry. Rivers choked with burned debris. In every direction a reminder that recovery from Australia’s unprecedented bushfire season lay far in the future.

BY NEAL HERBERT

T he day began routinely at the base camp in Swifts Creek, Victoria, a farming and timber town of a few hundred souls. In front of the generators providing power to the camp kitchen, the only sounds at sunrise were an assortment of wildly unfamiliar birds and the bleating of lambs in a nearby pasture.

After breakfast and a briefing, I joined the American firefighters of Task Force 3B, a collection of 20 federal employees from Oregon and Washington deployed to Australia to help manage the historic bushfires.

Our caravan of trucks was soon underway. While many members of this group had never met or worked together before, they moved with incredible efficiency. Few words were needed to create organised action. More than once I had the sense that they were all telepathic.

We rode in an assortment of diesel trucks unavailable in the US and the flat tyres were replaced. The flat tyres were replaced. The flat tyres were replaced. The flat tyres were replaced. The flat tyres were replaced. The flat tyres were replaced. The flat tyres were replaced. The flat tyres were replaced.

Above: US firefighters were tasked with marking, felling and clearing hazard trees in Victoria’s Ovens District.

The rain arrived without preamble. The work done by this task force will have to be repeated for months, if not years. Witnessing the slow grind of recovery made me realise how much the expense and drama involved in suppressing fires draws the spotlight. But in terms of time and effort, wildfire is mostly about what is next—for communities, for ecosystems, and for humankind's relationship with fire.
FIRE-SAFE CLADDING FOR THE AUSTRALIAN HOME

Recent suburban and rural fires have led to a re-evaluation of which cladding materials are suitable for residential buildings in Australia.

Which cladding products are combustible?

A significant misconception surrounding the combustible cladding issue is the notion that “aluminium cladding” is the culprit behind most building fires, and should be avoided. The reality is vastly different. It is crucial to examine the material composition of different cladding products to understand the risk they pose.

Aluminium composite panels

Aluminium composite panels (ACPs) are the most highly publicised form of combustible cladding. However, it is not their thin aluminium outer skins but their extremely flammable high-density polyethylene (HDPE) core that has caused greater fires across the globe. In a 2019 statement, Queensland Minister for Environment and Public Works Mick de Brenni likened installing ACPs on Australian buildings to seeing them “used in solid petrol”. One square metre of HDPE is equivalent to five litres of petrol, and when heated, HDPE releases 25 times the amount of heat it takes to ignite it—allowing it to rapidly ignite surrounding paraffins and spread the fire. This can be exacerbated by the flammable and ignitable wet paint coatings typically used to decorate the panels.

Expanded polystyrene

Expanded polystyrene (EPS) is popular for its insulating properties, but is another common contributor to residential fires. EPS consists of two metal faces laminated to a polystyrene core. As polystyrene is highly flammable, EPS must also now be removed from high-rise and other buildings.

Wood composites

Recent cladding investigations have brought to light the combustibility of wood-composite products, resulting in bans on their use on many buildings. They are composed of reconstituted wood mixed with plastic (typically polyethylene, polypropylene or polyvinyl chloride). As both of these materials are combustible, wood composites are neither suitable for high-rise buildings where “fire-safe” materials must be used, nor for cladding affixed to homes in bushfire zones. Composite materials burn when exposed to temperatures of 204 degrees Celsius or higher. While combining them with flame retardant additives or non-combustible materials, such as Colemanite, can increase their fire resistance, they are still inherently combustible. The risk of ignition remains even after taking such measures.

Timber

Although it is common knowledge that timber burns, some species have a greater degree of fire resistance than others. Hardwoods such as blackbutt are considered bushfire-resisting timber due to their density, which prevents fire spreading as rapidly as occurs with more porous timbers. Fire retardant coatings can also be applied to timber products to improve their fire resistance. It has been hotly debated whether timber should be permitted on urban buildings—while it may be less flammable than other products, no timber is non-combustible.

Solid aluminium as a fire-protection solution

Solid aluminium has been tested and complies with the requirements of the National Construction Code (NCC) for being a non-combustible material. While aluminium melts if exposed to temperatures above 600 degrees Celsius, it neither burns nor spreads flame. It possesses excellent thermal conductivity properties, meaning when it is exposed to high temperatures, it dissipates heat evenly and effectively across its surface. This prevents “hot spots” that could otherwise cause surrounding materials to ignite, and causes it more quickly than other products.

Solid aluminium therefore offers a cladding solution suitable for residential buildings or bushfire areas. It poses no risk of spreading fire, or of combusting with exposure to ember attack. Solid aluminium cladding is usually powder coated, offering a finish that will char but not burn, further preventing flame spread.

According to DECC Australia Director Mr Ross Doonan, solid aluminium products provide a much-needed answer for fire safety in Australian homes.

“Solid aluminium will not contribute to a fire in any way, and with the sublimation finishing technologies available, can be made to replicate timber and other materials. There is no reason to risk using combustible materials when a safe, compliant, attractive alternative is available,” he said.

As developers, decision-makers and fire professionals seek ways to make Australian homes more fire-safe, they should consider how the use of certified building materials can provide a solution to home fire crises, rather than simply viewing them as the cause.

It is crucial that fire engineers and certifiers are aware, and make authorities aware, that materials such as solid aluminium building products, and cladding do not pose a fire risk, can be safely installed on multistorey and single-storey buildings, and could present the solution to the cladding crisis.
The worst fire in the history of the London Underground network—until the 7/7 bombings almost 20 years later—occurred on 18 November 1987. It struck shortly after rush hour at around 7:15 pm in King’s Cross–St Pancras tube station, one of London’s busiest interchanges. Similar fires had been experienced many times before in underground stations, but this time was different: a flashover sent flames up an escalator, down a tunnel and into a below-ground ticket hall. Thirty-one people died, including one fire officer, and more than 100 were injured.

The fire was thought to have started when a lit match fell through a gap on a wooden escalator and ignited lubricating grease and litter beneath the steps. Early on it appeared to be under control, with trains arriving at the station even while it was being evacuated. However, from being ‘cardboard box size’ on discovery, a further 15 minutes saw it suddenly take hold of the entire 40-metre long, 30-degree slope, Piccadilly Line ‘up’ escalator.

A few minutes later the fire roared up into the ticket hall in a flashover. People in the ticket hall, which was still busy with the last of the evening’s rush hour crowd, were confronted with a wall of flame and black smoke moving rapidly toward them. Most of the fatalities occurred in the ticket hall. Ironically, many of the victims had been sent there from the underground station through a separate escalator as a way of escaping the fire.

Computer modelling and mock-up testing later demonstrated that the slope of the escalator caused gases built up in the pit to be suddenly propelled up slope. This phenomenon is now known as the ‘trench effect’.

The blaze cracked concrete, stripped tiles from walls and caused molten plastic to drip from the ceiling. Thick smoke in the ticket hall obscured exits and hampered rescue efforts. The heat from the fire was so intense that firefighters tackling the blaze had to use their hoses to spray the backs of colleagues in a bid to keep the temperature bearable for short periods. The fire was under control by 9:48 pm and was out at 1:46 am on 19 November. Search and salvage operations continued throughout the night. The subsequent inquiry (Fennell, 1988) made 157 recommendations, including replacing wooden escalators, extending smoking bans, improving emergency communications systems and revising station staff training programs.

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**KING’S CROSS STATION FIRE, LONDON—1987**

BY BARRY LEE OAM

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**Trench effect** can occur when fire burns along a partially enclosed, inclined surface. Flames lie along the surface (fluid dynamics Coanda effect), heating material higher up the incline, and emitting gases that auto-ignite in a flashover event (fire dynamics).
FP-002 Fire detection and alarm systems
The AS 1603.17, AS 4428.3 and AS 4428.18 revisions are currently at committee ballot. Work on the revision of AS 1670.6 continues and the recently approved project to amend AS 1670.1, AS 1670.3 and AS 1670.4 are yet to kick off.

FP-004 Automatic fire sprinkler installations
Amendment 2 to AS 2118.1:2017 is at committee ballot. Work progresses on the revisions of AS 2118.2 and AS 2118.6.

FP-009 Fire hydrant installations
AS 2419.4, the draft new standard for Storz connections, has now been released for public comment closing 29 July. The recently approved project to revise AS 2419.1 kicked off in early May.

FP-011 Special hazard fire protection systems

FP-020 Construction in bushfire-prone areas
Amendment 2 to AS 3959:2018 has been released for public comment closing 23 July.

FP-022 Fire protection of mobile and transportable equipment
Work progresses on the revision of AS 5062.

TS-001 Building commissioning
Work progresses on the new technical specification.

Technical Advisory Committees

The most recent round of TAC meetings was held in March. The next round, proposed to be held in July, will be held entirely via web conference for the first time given the COVID-19 travel restrictions and social distancing requirements.

TAC/1 Maintenance of fire protection systems and equipment
Since their March meeting, the TAC has continued to meet regularly online to review the large number of comments received for inclusion in the draft project proposal for the revision of AS 1851-2012.

TAC/2 Fire detection and alarm systems
The Good Practice Guide QPG-08 Residential Smoke Alarms was published on 7 February 2020. Progress continues on the draft Good Practice Guide on speaker layout and an Information Bulletin on building occupant warning systems.

TAC/3/7 Portable and mobile equipment
The Australian Competition and Consumer Commission is reviewing the mandatory safety standards for portable fire extinguishers. TAC/3/7 provided input to this review and is continuing to monitor its progress.

TAC/11/22 Special hazards fire protection systems
Version 3 of Information Bulletin IB-06 Selection and use of firefighting foams was published in late May and takes into account recent research findings, existing and proposed regulatory positions and other updates and new material. The TAC continues to monitor and participate in global and local developments in firefighting foams and associated policies as well as Standards Australia projects.

TAC/17 Emergency planning
This TAC did not meet in March. However, progress continues on the revision of Information Bulletin IB-11 Evacuation Diagrams.

TAC/18/19 Passive fire protection
Work continues on the update of PS-05 Product compliance and evidence of suitability and development of a Good Practice Guide on intumescent dampers. This TAC also met with TAC/1 in March on critical defects for fire doors.

TAC/20 Bushfire Safety
The TAC continues to monitor and provide input to future AS 3959 work as well as other bushfire documents and requirements.
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– Competitive pricing
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– Personalised service

Windsor Management Insurance Brokers has specifically designed an insurance program to meet the increasingly complex insurance exposures of the fire protection industry. Fire protection professionals require specialised cover and our insurance solutions are tailored to meet those individual requirements.

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NEW TEST APPROVALS

Ceilings

Walls

Floors

NEW APPROVALS INCLUDE:

- Typical apartment configurations able to achieve FRL -/90/90 WITH NO WRAP
- Various services to achieve FRL -/120/120 WITH NO WRAP
- Bigger services
- Suitable for a wide variety of walls, floors & now ceilings

Suitable for a wide variety of services:

- Copper Gas & Water Pipes up to 40mm
- PEX and PEX AL Water & Gas Pipes up to 32mm
- Steel Sprinkler Pipes up to 60mm
- Air Con Lagged Copper / Paircoil up to 13mm/19mm
- DWV and PVC Pipes
- TPS, Power and Mains Cables
- Electrical & NBN Conduits
- Data & Comms Cables

*Always check the relevant test certification meets your project requirements.*