

# **FIRE** AUSTRALIA

**Building safer communities with the Australian Disaster Resilience Index**

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**Getting ready to phase out HFCs**

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**New guidance on firefighting foams**

## **Avoiding a red hot summer**

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## STAY CONNECTED AND EMBRACE CHANGE

**STUART ELLIS, AM**  
CEO AFAC



This year has presented many challenges that have required urgent and extraordinary responses, both from within the fire and emergency sector and more broadly.

Intense bushfire activity across multiple states and over an extended period impacted many communities on a scale beyond what we have previously experienced. And now we find ourselves in an era of recovery further complicated by the effects of the COVID-19 pandemic. Agencies and AFAC are also directing extensive time and resources to inquiries and the Royal Commission into National Natural Disaster Arrangements.

Despite restrictions and interruptions to our workplaces and processes, there continues to be an impressive level of collaboration between industry organisations, as well as a commitment to learn from the 2019–20 bushfire season and deliver positive outcomes for the communities we serve. The sector's adaptability has been exhibited through agencies sharing online resources that ensure our collective continuity and growth. Undoubtedly, we will also learn from the respective inquiry conclusions and recommendations.

At AFAC, we have developed and delivered webinars to maintain engagement across our membership and beyond. These have included the release of the updated *Fire Brigade Intervention Model Manual* and the highly anticipated launch of our new publication, *Prescribed burning in Australasia: the science, practice and politics of burning the bush*. Both are addressed in this edition of *Fire Australia*, and I encourage you to explore these new publications and their associated online resources.

While we cannot come together this year for the AFAC20 Conference and Exhibition, it will return to Adelaide in 2022. We have our eye on the future, with preparations already underway for AFAC21 powered by INTERSCHUTZ in Sydney, where we look forward to bringing the emergency management sector together at our keystone event.

Until then, AFAC collaboration groups continue their important work virtually, and we are buoyed by the strong participation in these groups. Our new environment has been an agent for change. It has led to the development of more agile, robust and flexible arrangements that increase our resiliency and offer even more services to our members. Challenges continue to be met with creative solutions, and I encourage you to be bold and brave by doing things differently where it provides a better service to our communities.

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# FIRE AUSTRALIA

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### OUR COVER

Flames coalescing in the centre of a prescribed burn.

PHOTO: LACHIE McCAW

### ABOUT FIRE AUSTRALIA

*Fire Australia* is a joint publication of Fire Protection Association Australia, AFAC 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: paul.waterhouse@fpaa.com.au. For more details on submitting a contribution, please contact the editors.

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## 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. ■

Pictured at the announcement of the Fire Protection Training Academy on Friday 12 April are (L to R)—FRNSW Acting Deputy Commissioner—Roger Mentha; FPA Australia President—Bill Lea; FRNSW Commissioner—Paul Baxter; FPA Australia CEO—Scott Williams; and FRNSW Chief Superintendent—Ken Murphy.



PHOTO: FPA AUSTRALIA



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## 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-generation bushfire simulation capability, and a cost-benefit analysis. After detailed analysis, the FPS Board concluded that a staged approach with CSIRO Spark is the most capable, flexible and cost-effective of the options. The Board is looking at ways of better including a broader cross-section of agency voices to reflect the importance of bushfire 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@firepredictionsservices.com.au](mailto:john.bally@firepredictionsservices.com.au). ■

## UPDATING THE FIRE AVIATION TRAINING AND ASSESSMENT FRAMEWORK

The AFAC Learning and Development Directorate and the National Aerial Firefighting Centre have collaborated to review and refresh the Fire Aviation Training and Assessment Framework (FATAF). Originally created in 2011, the FATAF sets out nationally agreed roles and training requirements for agency personnel who manage and support aviation operations. It enables a nationally consistent approach to ensure personnel are competent to perform aviation roles, including those defined in the Australasian Inter-Service Incident Management System. The FATAF required revision to reflect a fast-changing operational and regulatory environment, accommodate new aviation capabilities, 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 management and support capability. This included a revision of the training



PHOTO: WIKIMEDIA COMMONS  
The Fire Aviation Training and Assessment Framework enables a nationally consistent approach to aviation personnel competency.

framework to accommodate all hazards. Reviewing and finalising training requirements for aviation roles is necessary for the future development of online training and the application of simulation in aviation training. The new FATAF will require new units of competency in the NRT system. Twelve new units of competency have been drafted for the proposed aviation roles, and five current units of competency have been updated in line with the associated roles. Once

completed, the material will be provided to Australian Industry Standards. The case for change was approved by the Australian Industry Skills Council (AISC) in December 2019. AISC is responsible for ensuring the material is nationally reviewed by a Technical Advisory Committee. Other stakeholders outside the fire and emergency services will therefore review the material, assuring a robust and rigorous approach to training and assessment for aviation roles. ■

## NEW RESEARCH FUNDING WILL IMPROVE RESILIENCE TO NATURAL HAZARDS

The Bushfire and Natural Hazards CRC and AFAC welcome the recent announcement from the Australian Government to continue funding natural hazards research in Australia by investing AU\$88.1 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 Woodthorpe AO, FTSE, Chair of the Bushfire and Natural Hazards CRC. "AFAC has worked with researchers over the last 17 years to progress understanding as well as practically use the research outcomes 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. The new centre will be established over the next 12 months, led by the CRC, AFAC, CSIRO, Emergency Management Australia and the Department of Industry, Science, Energy and Resources. ■

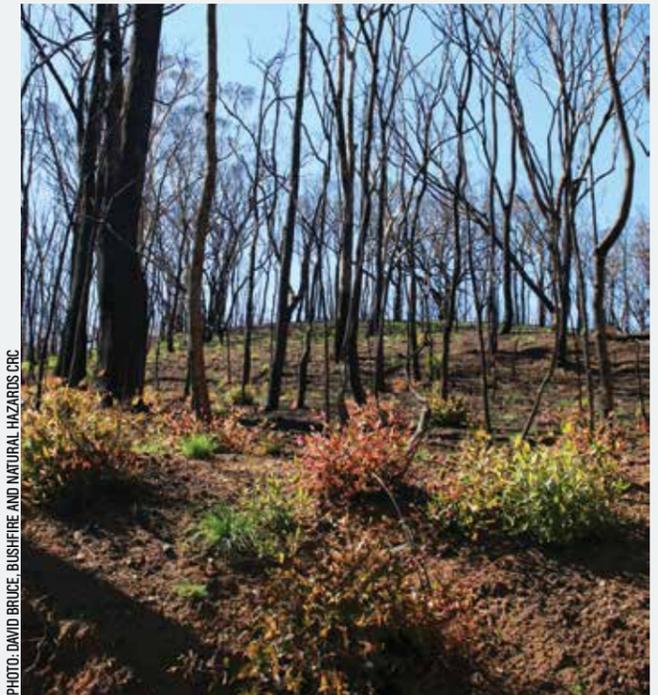


PHOTO: DAVID BRUCE, BUSHFIRE AND NATURAL HAZARDS CRC

## EXCELLENCE IN CRC RESEARCH NATIONALLY RECOGNISED

Research conducted by the Bushfire and Natural Hazards CRC is making an impact all around Australia and has recently been recognised with multiple awards. Two CRC projects were recently acknowledged at the annual Emergency Media and Public Affairs (EMPA) awards for Excellence in Research. The winning project, *Effective risk and warning communication during natural hazards*, explored how emergency management agencies can minimise the effect of conflicting cues on the instigation of protective action. The research was led by Dr Paula Dootson and her team at Queensland University of Technology: Associate Professor Dominique Greer, Professor Vivienne Tippett and Dr Sophie Miller. It provides clear evidence of conflicting cues, collates firsthand interview responses from Australian emergency services representatives, and explores the types of strategies that might help mitigate the negative effects of conflicting cues. The project

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. Highly commended by EMPA was research on the motivations, experiences and emotions of State Emergency Services (SES) volunteers. Led by Dr Darja Kragt from the University of Western Australia, this research provides insights and data nationally to help develop new recruitment and retention strategies for SES volunteers. It is part of the CRC project *Enabling sustainable emergency volunteering*. Earlier this year, research into mapping community engagement across Australia by Associate Professor Kim Johnston (Queensland University of Technology), Professor Maureen Taylor (University of Technology Sydney) and Dr Barbara Ryan (University of Southern Queensland) received the highly commended Champion of Change Award. The team was presented with

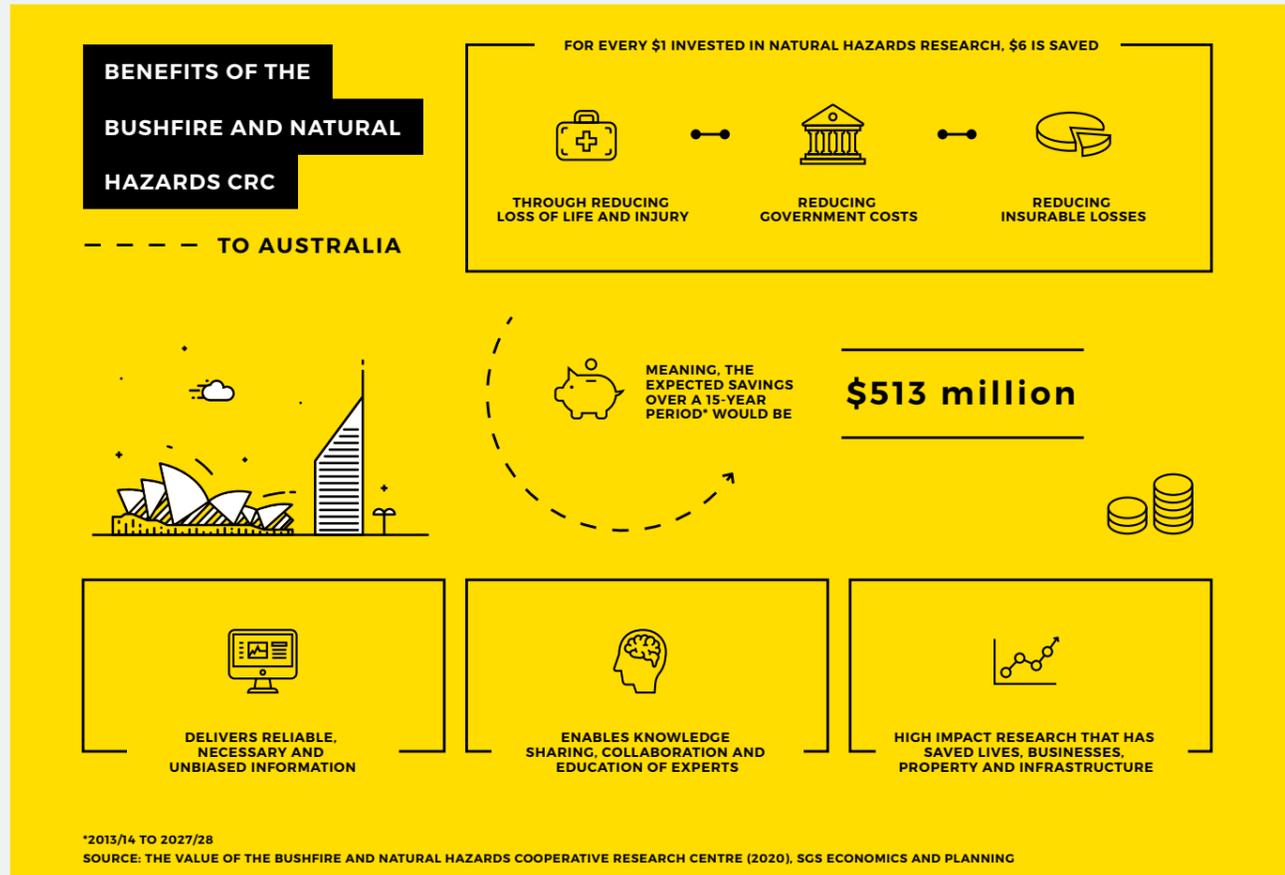
the award by Queensland's Inspector-General Emergency Management, Alistair Dawson, at the 2020 Public Safety and Associated Agencies International Women's Day event. Their research is helping emergency management agencies better prepare communities for emergencies, with long-term benefits such as a continuous model of community engagement for preparedness. ■

L to R— Dr Barbara Ryan; Inspector-General Emergency Management—Alistair Dawson; A/Prof Kim Johnston; Prof Maureen Taylor.



PHOTO: OFFICE OF THE INSPECTOR-GENERAL EMERGENCY MANAGEMENT

# EVALUATING THE IMPACTS OF THE CRC



GRAPHIC: BUSHFIRE AND NATURAL HAZARDS CRC

Benefits of the Bushfire and Natural Hazards CRC.

Australian communities are greatly benefiting 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.

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. ■

Read the full SGS report at [www.bnhcrc.com.au/news/2020/evaluating-impacts-crc](http://www.bnhcrc.com.au/news/2020/evaluating-impacts-crc).



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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 FPA Australia "to exercise the functions of an accreditation authority" in relation to fire systems design and fire safety assessment 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 not make a significant difference—they are still responsible for ensuring that those they hire to carry out the work are competent to do so. However, accreditation makes it much easier for owners, managers and certifiers to check the status of those they employ.

The approval means 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.

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



The recognition of FPAS accreditation for Fire Systems Design and Fire Safety Assessment is an important step towards a more professional fire protection industry.

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

## 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:

- ◆ details and streamlines the different classes of registration for certification work

- ◆ 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. ■

To find out more and subscribe for updates on course availability, visit [cpd.abcb.gov.au/info](http://cpd.abcb.gov.au/info).



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## 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 design and rating names would be easier to comprehend. In November 2019, the Australian Fire Danger Rating System (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 Geoplex, 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 86 percent of groups reporting 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.com/groups/male-champions-change-fire-emergency/>

## AFAC20 CONFERENCE AND EXHIBITION POSTPONED

Earlier in the year, the AFAC Conference team committed to making 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.

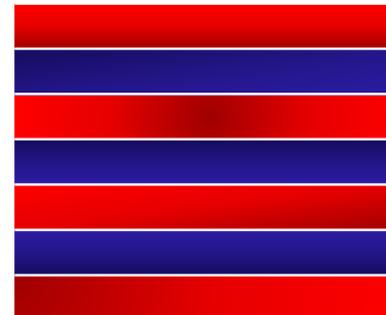
Full details of the conference will be available in due course. We are still committed to bringing our award-winning event to South Australia, and are pleased to announce that we will return to Adelaide in 2022. We look forward to working with our host agencies to plan a world-class conference and exhibition. 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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# APPLYING SCIENCE TO HEATED DEBATE

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.



PHOTO: LAHLE MCCAW

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

BY ALANA BEITZ

AFAC

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 Australasian 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 career 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.



PHOTO: RACHEL DAWKINS

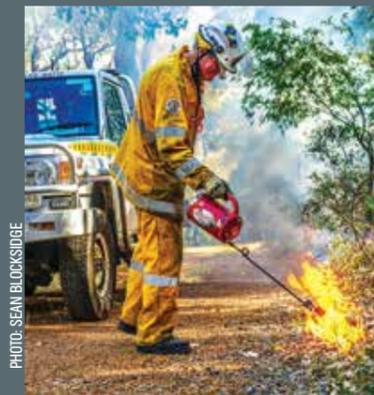


PHOTO: SEAN BLOCKSIDGE

Fire management agencies have increased their consultation with communities, allowing direct input into decision-making in some jurisdictions.

Few people believe that prescribed burning should never happen, but reaching agreement on the best way to do it is a complex problem.



PHOTO: VERONICA CLIFFORD, S3ION

“But one of the things that has 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 policy-makers. 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 settlements, housing affordability, impacts on tourism, health impacts, ingress and egress 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 swerving 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, or 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 livelihoods, 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.com.au/auxiliary/shop/product?ID=19417](http://www.afac.com.au/auxiliary/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/QgkrkobsRoU>

An aerial driptorch in operation in New Zealand. *Prescribed burning in Australasia* explores the various methods of prescribed burning, from the ground and the air.



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**  
Bushfire and Natural Hazards CRC

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 inquires, 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 supportive 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 (Swinburne 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 mountaintops—on landscape scales. This is really challenging territory as we see an increase in the extent, frequency and severity of drought."

The third session elaborated on the potentials and limitations of prescribed burning in practice. Dr Adam Leavesley (ACT Parks and Conservation Service) provided practical examples of bushfire suppression, with Dr Valerie Densmore (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 modelling, while Dr Simon Heemstra

(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 [bnhccr.com.au/2020/firefuels](http://bnhccr.com.au/2020/firefuels).

"Firefighters are reporting places burning that we haven't seen burning in the past—rainforest gullies, damp mountaintops—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 (ODS & SGG) Board

Since the mid-1990s, hydrofluorocarbons (HFCs) have been a critical asset for fire 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 Australia and the other countries party to the Montreal Protocol met in Kigali, Rwanda. There, they reached a global agreement to reduce the production and importation of HFCs to cut greenhouse gas emissions.

Phase-down targets were set for countries based on their respective economic profiles. This decision was made to give developing countries enough time to commercialise and then develop suitable alternatives to HFCs in the future. The amendment will see an 85% phase-down in developed countries by 2036, an 80% phase-down by 2045 in most developing countries including China, and the remaining developing countries reaching an 85% phase-down by 2047.

The Kigali Amendment came into effect on 1 January 2019. At that time, 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 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.

HFCs have a greater ability to trap heat in the atmosphere than a similar mass of carbon dioxide. For example, the release of one tonne of HFC 23 is equivalent to releasing 14,800 tonnes of carbon dioxide into the atmosphere.

According to the Department of Agriculture, Water and the Environment (DAWE)—formerly the Department of the Environment and Energy—the HFC phase-down is projected to reduce Australia's emissions by 21 million tonnes (carbon dioxide equivalent) between 2019 and 2030.

The phase-down applies to all commonly used high global warming potential HFCs, either alone or contained in a blend with other chemicals. It applies only to bulk imports of HFCs, such as in cylinders.

### A need for change

The fire protection industry has now arrived at a juncture where it must begin to look beyond HFCs, simply because their production and importation will incrementally decrease as we edge closer to 2036.

A two-tier quota system has been

PHOTO: SHUTTERSTOCK

introduced 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, these importers will be able to import up to the amount of quota allocated to them. The quota is expressed in carbon dioxide equivalent (CO<sub>2</sub>e) 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 raft 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 Halocarbon 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.

"Whether 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

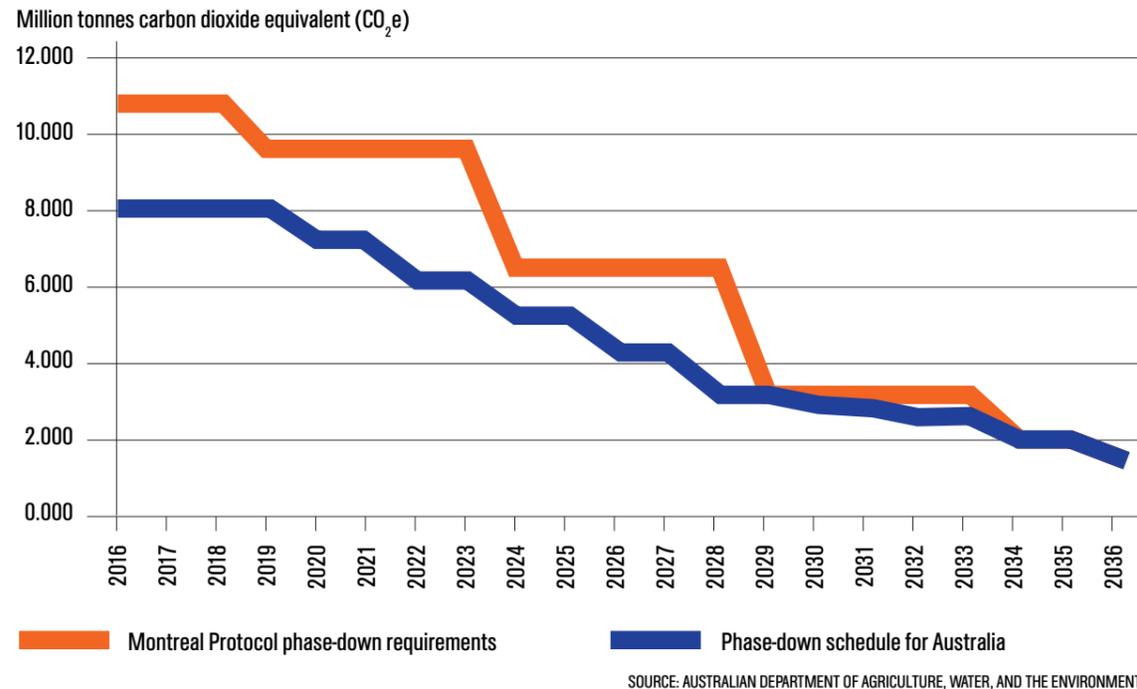
While there will be some challenges for industry to navigate as HFC quota is reduced, the silver lining is that it will force product developers to consider cleaner alternatives—a critical prerogative of Kigali Agreement. The phase-down will provide a global

The primary function of the HFC phase-down is to reduce greenhouse gas emissions. It is estimated the global phase-down will reduce HFC emissions equivalent to 72 billion tonnes of carbon dioxide by 2050.

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.

**Australia's HFC phase-down**

The Montreal Protocol's starting point limit is around 10.7 million tonnes of CO<sub>2</sub>e, but Australia started its phase-down at a limit of 8 million tonnes CO<sub>2</sub>e.



framework for industry innovation to create replacement technologies, as well as provide long-term certainty and stability in the Australian market.

PHOTO: NATIONAL HALON BANK



Ms Nigido 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-55 (nitrogen and argon) and IG-541 (nitrogen, argon and CO<sub>2</sub>e), 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.

"The industries that use these gases have a long history of adapting to changing chemicals. The fire industry responded quickly when chemicals were banned under the Montreal Protocol. The fire protection industry has been moving to HFC replacements or skipping HFC entirely, even before the phase-down was announced." ■

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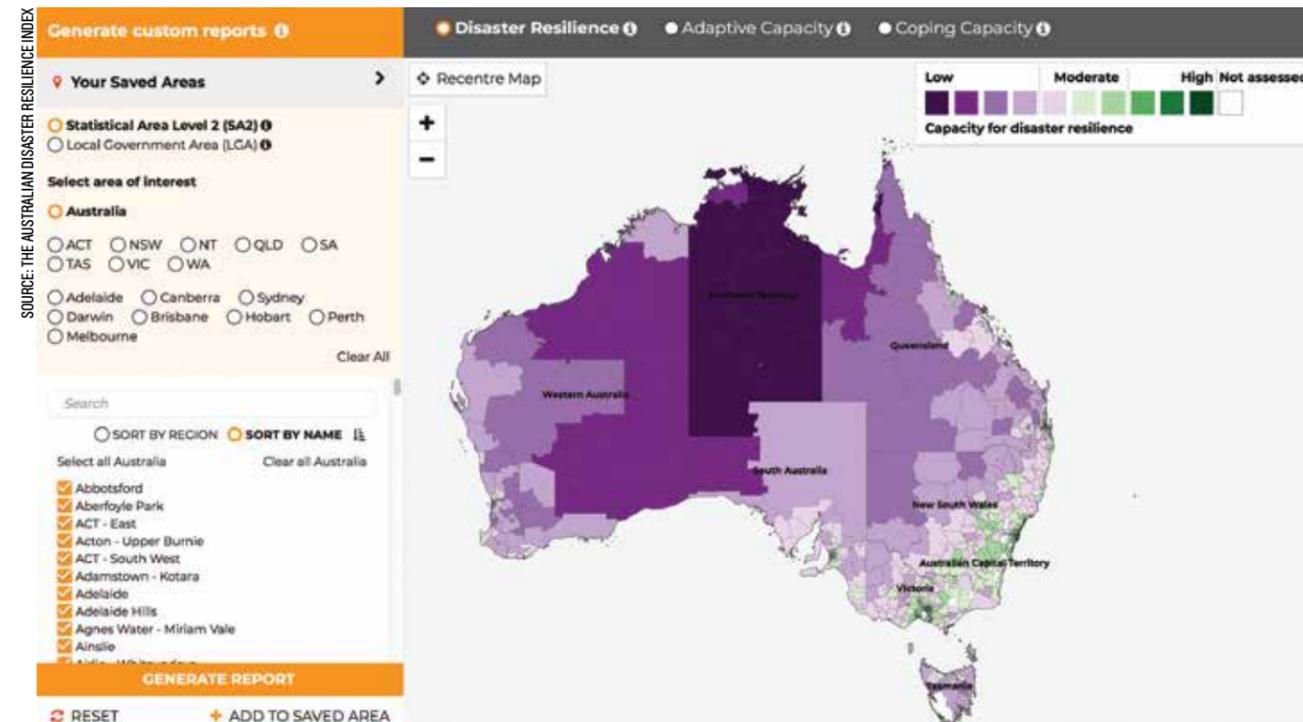
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# THE NEW AUSTRALIAN DISASTER RESILIENCE INDEX A TOOL FOR BUILDING SAFER, ADAPTABLE COMMUNITIES

An understanding of disaster resilience will help communities better prepare for, absorb and respond to natural hazards. A newly launched website helps explain and measure resilience so we can adapt and transform our communities for the better.



BY **BETHANY PATCH**

Bushfire and Natural Hazards CRC

Australians 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, form alliances and develop targeted improvements.

For example, if you use the Index to look at the overall resilience of the greater Perth area, you will see a range of resilience capacities.

This means that it is not one-size-fits-all for areas such as Perth. Understanding the differences between communities within your area will help you understand where, specifically, to invest more resources and resilience-building initiatives.

### Five Australian disaster resilience profiles

"What works in one place won't necessarily work somewhere else," Dr Parsons said, explaining that the improvements to resilience will look very different in different communities.

To explore this, the Index also proposes five disaster resilience profiles in Australia—nationwide collections of communities that all fit a similar profile of resilience strengths and constraints. These profiles provide an opportunity to address specific constraints and strengths of an area.

For example, areas in western Queensland, north-western New South Wales, South Australia, Northern Territory and Western Australia all share a similar resilience profile.

"In some places, the capacity for disaster resilience comes from social strengths," Dr Parsons said. "These same places can also have constraints on disaster resilience because of a lack of access to government services or telecommunications, and low economic capital. In another place, the capacity for disaster resilience might come from the provision of emergency services or local and regional planning. But these places also face limitations from lower community connectedness."

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-resilient 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 or 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 [adri.bnhcrc.com.au](http://adri.bnhcrc.com.au)

# BUILDING RESILIENCE THROUGH LAND USE PLANNING

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.

BY **KATLYN SAMPSON**  
AND **ELLA WILKINSON**

Australian Institute for Disaster Resilience

The Australian Institute for Disaster Resilience (AIDR) has published the highly anticipated update to its Handbook Collection: *Land use planning for disaster resilient communities*.

The new handbook presents the national principles for good practice in land use planning to build disaster-resilient communities. It establishes community wellbeing and disaster resilience as the overarching aim of land use planning, and presents a procedural framework that can be applied across the decision-making process at different levels of land use planning.

Incorporating contemporary understanding and information on the nature of risks and natural hazards, technology and information sharing, risk assessment techniques, risk treatments and scenario modelling, the handbook summarises significant natural hazards and their impacts in Australia. It also provides background information about key concepts such as vulnerability, exposure and risk.

Focusing on how land use planning for new developments can be undertaken collaboratively, the handbook highlights that effective land use planning requires input from a broad range of stakeholders, including:

- ◆ urban and regional planners
- ◆ hazard leaders
- ◆ developers
- ◆ communities
- ◆ businesses
- ◆ emergency services
- ◆ local government
- ◆ state and territory government agencies.

*Land use planning for disaster resilient communities* is intended to build capability in, and understanding of, the role of land use planning in natural hazard risk management. The handbook aims to:



- ◆ build awareness of, and capability in, planners engaging with natural hazard and emergency managers
- ◆ integrate consideration of natural hazard risks into the planning process
- ◆ provide understanding of the reasons for, and main mechanisms of, risk management in land use planning in communities
- ◆ provide understanding on how decisions of different stakeholders in planning affect communities' natural hazard risks.

The handbook fulfils a critical role in national resilience under the policy framework established by the National Strategy for Disaster Resilience. It reflects increasing national and international focus on the need to reduce disaster risk and build disaster resilience, as considered in the National Disaster Risk Reduction Framework, Profiling Australia's Vulnerability and the Sendai Framework for Disaster Risk Reduction. ■

*Land Use Planning for Disaster Resilient Communities* is freely available on the AIDR Knowledge Hub: [knowledge.aidr.org.au/resources/handbook-land-use-planning](http://knowledge.aidr.org.au/resources/handbook-land-use-planning). Hard copies can be purchased via the AIDR shop.

### STRATEGIC BUSHFIRE PLANNING FOR INGLESIDE NSW

In 2016, a draft *Land Use and Infrastructure Strategy* was released for community consultation by the NSW Department of Planning, Industry and Environment in conjunction with the Northern Beaches Council.

The proposal considered the release of land for residential and business development that allowed for the development of more than 3,000 new dwellings. Following consultation, the safety of the plan was further investigated, and a Bushfire Risk Assessment produced.

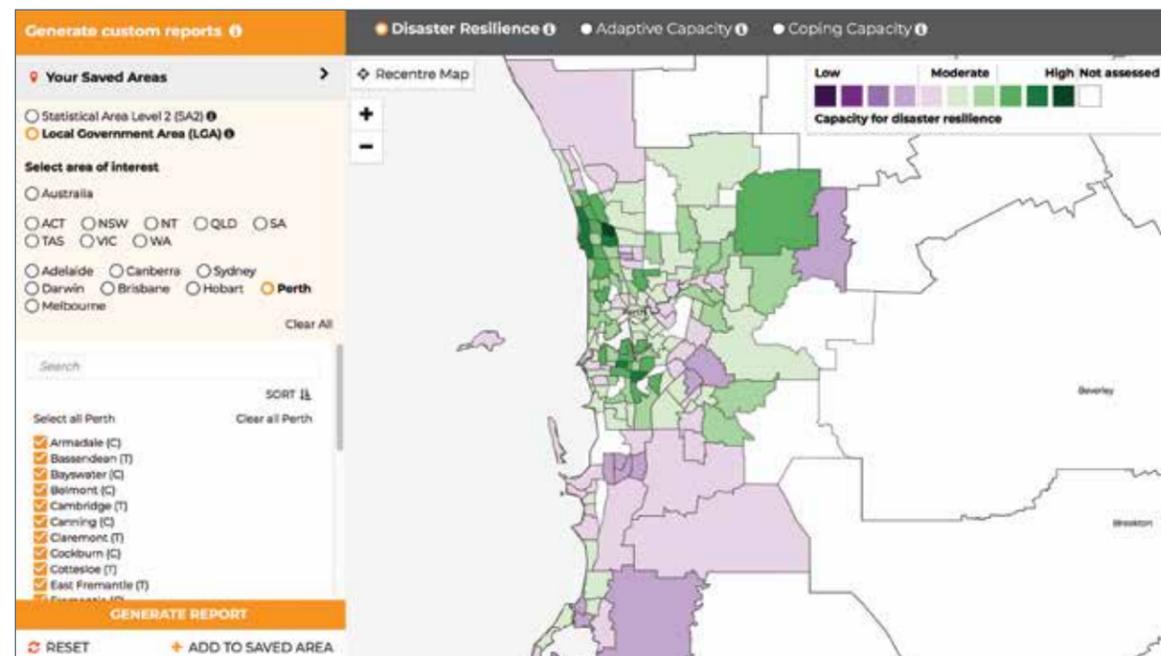
The assessment raised concerns about bushfire safety for Ingleside. It concluded that the proposed plan would introduce unacceptable risk to the community by constraining the existing evacuating routes, and expose future residents to unacceptable bushfire risks.

Based on this information, the Department of Planning, Industry and Environment together with Northern Beaches Council and Rural Fire Service NSW decided to withdraw the proposed draft Land Use and Infrastructure Strategy for the Ingleside area.

Following this decision, further work looked at ways to improve bushfire resilience for current residents, including developing a detailed bushfire evacuation model (Department of Planning, Industry and Environment 2018).

Example from *Land use planning for disaster resilient communities*, page 37.

The Australian Disaster Resilience Index provides a snapshot of disaster resilience across Australia.



SOURCE: THE AUSTRALIAN DISASTER RESILIENCE INDEX

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# DEALING WITH THE CHALLENGES OF CONDUCTING FIRE PROTECTION WORK IN AUSTRALIA DURING COVID-19



PHOTO: SHUTTERSTOCK



PHOTO: FPA AUSTRALIA

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.

BY **NATHAN SEMOS**

Fire Protection Association Australia

**W**e are living in unprecedented times, with COVID-19 gripping communities across the globe. Shutdowns, restrictions and social distancing have changed the nature of business and created uncertainty for every industry.

In Australia, the Commonwealth Government has led a national cabinet of its regional counterparts to determine the most effective strategy to deal with the crisis. As a federal system of government, states and territories have the responsibility for approving and implementing any proposed initiatives.

## 'Non-essential' businesses

One of the cabinet's most significant decisions was to determine which businesses would be deemed 'non-essential', and therefore unable to operate.

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, residents were concerned, or 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



PHOTO: SHUTTERSTOCK

# US RISK EDUCATION PROGRAM COMBINES TECHNOLOGY AND FIRE KNOWLEDGE

A disaster resilience education pilot project developed by students from the Worcester Polytechnic Institute in Massachusetts, US, identified three key factors for success: developing knowledge and skills, innovative use of technology, and engaging with community hazard experts.

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 to adapt to the 'new normal' and help to limit virus spread. 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. 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 climate – taking the time to provide guidance and advice to their peers for the betterment of the industry.

Despite all of the challenges of the pandemic, the Australian fire protection industry has not lost sight of its ultimate purpose. Our practitioners will continue to work tirelessly with clients, tenants, allied industries and government to ensure that people and property will always be protected from the adverse risks of fire. ■

This article was previously published in *Asia-Pacific Fire Magazine*.

Sponsored by the Australian Institute for Disaster Resilience (AIDR), the Disaster Resilience Lesson Program aligned with the digital technology curriculum for Year 8 students at Emerald Secondary College in Victoria—located in a high-risk bushfire zone—to explore local bushfire risk and community resilience.

Built on the philosophy that technology makes lessons more interesting for students, the project incorporated the use of advanced hazard simulation software and online learning. A designated learning website became the primary mode of course delivery as learning tasks moved online due to COVID-19.

Students undertook several interactive tasks, such as developing a collaborative disaster map using information from the AIDR Disaster Mapper and Knowledge Hub resources. They also used an online noticeboard to post questions to hazard experts from the Country Fire Authority (CFA), AIDR and AFAC.

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 superimposed text and images to identify high- and low-risk areas considering factors such as terrain, wind, vegetation and appropriate shelter areas.

The students posted their projects online and received video feedback from Emerald Fire Brigade Captain,

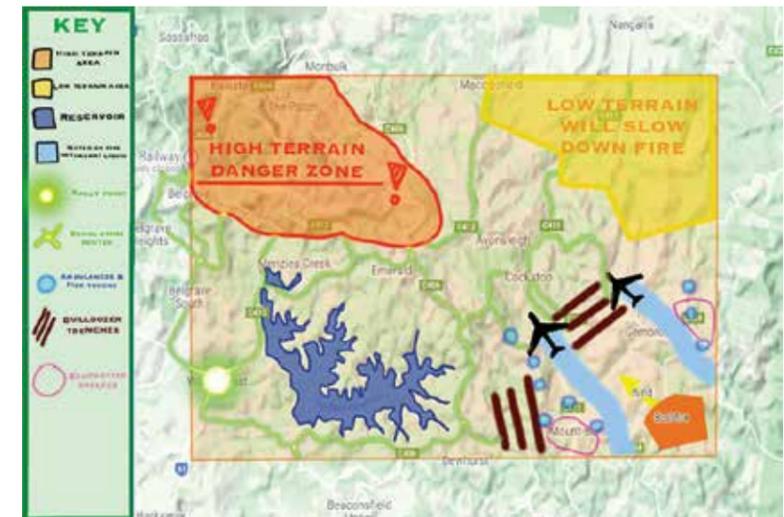


PHOTO: SOPHIE G, EMERALD SECONDARY COLLEGE

Mr Paul Yandle. Captain Yandle reflected on the students' positive achievements and provided further information about the local context and considerations for the safety of the community in a bushfire.

Pre- and post-assessment of students revealed a significant increase in understanding of disaster resilience. Before the project, when students were asked what actions they could take to prevent bushfire impact, 69% of students responded 'fire safety and reducing flammables', with fewer than 2% responding 'evacuation plan or survival kits'. Post-assessment, 24% of students identified 'evacuation plan or survival kits', while others made a broader selection of actions, including 'seeking

shelter', 'wait for instructions', and 'fire response or resources'. This result indicates a more holistic understanding of bushfire preparedness and response among the students.

Overall, 70% of students reported that communicating with community experts at CFA, AIDR and AFAC helped them to learn, and almost all (94%) said the use of technology supported learning. The three most popular aspects of the project were 'interactive activities', 'learning a lot' and 'the simulations'. ■

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](http://www.sites.google.com/view/wpi-aidr-lessons).

Emerald Secondary College students use digital mapping tools to develop a bushfire response plan for their local area.

# UNDERSTANDING BUSHFIRE RISK, WARNINGS AND RESPONSES

## LESSONS FROM THE 2018 REEDY SWAMP FIRE

The bushfire threatens Tathra.

PHOTO: CALIEB KEENEY, TIMBERLINE HELICOPTERS



PHOTO: BEN SHEPPERD, NSW RURAL FIRE SERVICE

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 WHITTAKER,**  
**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

**H**ow embers spread fire into built-up areas, the dangers of late evacuation, and the need to provide greater clarity in warning messages were three key findings from research conducted after the 2018 Reedy Swamp fire on the New South Wales south coast.

The research, which investigated community preparedness and responses by interviewing 120 people affected by the fire, was undertaken by the Bushfire and Natural Hazards CRC, the University

of Wollongong and Macquarie University, and commissioned by the NSW Rural Fire Service (RFS).

Key questions addressed by the study related to people's perceptions of bushfire risk, community planning and preparation, and their response to warnings and their experience in the aftermath. Importantly, the research found that many believe preparing for a bushfire involves action only when directly threatened by fire, as opposed to preparation activities that can be undertaken well in advance of an active fire threat.

Based on the findings, the NSW RFS continues to review and refine its approach to public information and warnings, and the structure and content of warning messages. The RFS is also piloting the use of Community Field Liaison teams to provide consistent messages and advice on the ground.

### The fire

On Sunday 18 March 2018, the Reedy Swamp fire bore 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 communications 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 and used

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

## WHAT RESIDENTS SAID

### On being better prepared to leave early next time

"I'd just take off very quickly. I wouldn't wait. No, I'd take off very quick. And if it [the house] burns, it burns. 'Cause you just don't know where it's going to go, you know. Your life's the main thing."

### On how businesses hosting visitors responded to the fires

"There was a lot of hesitation with people not wanting to leave. They had a look at the website themselves. Went, yeah, no, 'I don't think it's gonna come this way', because there were a lot of rumours going around at the time saying it probably wasn't gonna hit that far. So, people weren't overly concerned."

### On the time of year that the fire occurred

"Yes, I was surprised at the timing. My word, yeah. This late in the season. We should be hazard-reducing. We should be lighting fires now, not preventing them."

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



PHOTO: NSW RURAL FIRE SERVICE

NSW Rural Fire Service responding at Tathra.

into the local area impeded the delivery of warnings, information and advice.

**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 telecommunications infrastructure fails.

**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 bushfire season over-influenced their preparedness and response.

**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 along with the Reedy Swamp fire research, is building on previous NSW RFS-contracted research undertaken by the CRC for major bushfires in the Blue Mountains, Coonabarabran and Southern Highlands areas, as well as for fire agencies in Victoria, Tasmania, WA and SA. ■

Find out more about this research at [bnhrcr.com.au/research/reedyswamptaskforce](http://bnhrcr.com.au/research/reedyswamptaskforce).

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# MEASURED RESPONSE

## FIRE BRIGADE INTERVENTION MODEL

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.

BY **ALANA BEITZ**

AFAC

**W**ith the Fire Safety Verification Method coming into effect on 1 May, the Fire Brigade Intervention Model (FBIM) is now referenced in the National Construction Code.

To reflect these changes, AFAC updated its *FBIM Manual*, publishing Version 3 in May. The previous version of the *FBIM Manual* (Version 2.2) was released in 2004, so Version 3 was an opportunity to make the model current and streamline some of the workflows.

The methodology allows the time of all fire brigade intervention activities—from notification of fire to completion of search and rescue—to be measured, and considers internal and external factors that may increase or decrease a fire brigade's response time.

The latest update of the *FBIM Manual* presents a simplified version of this process that takes into consideration improved digital technologies and better calculation methods to support users to reach more accurate results to inform building performance provisions.

To introduce the updated publication, AFAC hosted a webinar on 3 June with

AFAC Built Environment Consultant Mr John Clampett, a member of the original FBIM Working Group formed in the 1990s, and Mr Jamie Vistnes, Manager of the Fire and Rescue NSW Fire Safety Policy Unit.

### History of FBIM

By 1995, work had already begun on the development of a performance-based building code in Australia. Up until 1996, there were no performance provisions.

During the development of the new code, the Building Codes Committee, the industry advisory group to the Australian Building Codes Board (ABCB), discussed the role of fire services in the performance provisions. They determined that if the fire brigade role was to be reflected in the performance provisions, fire brigades needed to provide a measurable and transparent methodology by which their role could be seen and calculated.

"It's important to note that this was to be a theoretical methodology, it was not in any way to reflect the actual operations of what happens on a fire ground," Mr Clampett explained during the webinar.

"No two fires are the same, and even a similar fire can be dealt with in different ways depending on the circumstances at the time. It's a theoretical model—a fire engineering tool."

With 12 months to deliver the new methodology, AFAC built a committee with staff drawn from fire agencies across Australia and New Zealand. It was a multidisciplinary team of people with engineering, applied science, mathematics, building surveying and business administration knowledge. Most on the committee were also operational firefighters, representing a collective 80 years of firefighting experience.

To determine if a similar method already existed, national and international studies were undertaken, including an extensive literature review, and an international research tour of fire authorities, regulatory authorities and educational institutions in New Zealand, the United States, Canada, England, the Netherlands and Sweden, where fire brigades were operating—or preparing to operate—in a performance-based building code environment.

While the research returned valuable data and operational procedures, no methodologies were identified in relation to the role of fire brigade intervention in the fire engineering environment, so the committee set about developing a methodology from scratch.

The team developed flow charts that covered all of the tasks a fire service will

PHOTO: OFES

undertake in relation to a fire: initiation of the fire, fire brigade contact, travelling to the fire scene, setting up, undertaking assessment and investigation.

The flow charts were developed with an extensive range of data to supplement the tasks. Some of the data was pre-existing and other inputs were developed by fire authorities across Australia and New Zealand undertaking specific drills to generate data and measure times.

This became the FBIM, which was subsequently put to the Building Codes Committee of the ABCB. The Board determined the FBIM was a suitable method and approved the process, permitting the inclusion of the role of fire services into the performance provisions of the BCA.

### Key changes to FBIM

As presented by Jamie Vistnes, Version 3 of the FBIM guideline has been split into two different documents: the *FBIM Manual* and the *FBIM Dataset*. Separating these components allows data to be updated in the evolving *FBIM Dataset* as it is received.

Terminology has been updated. For example, 'fire engineering brief', 'fire engineering design brief' and 'fire engineering safety brief' are now all

referred to as a 'performance-based design brief'. *The Fire Engineering Guidelines* have also been updated to the *International Fire Engineering Guidelines*.

The process to measure margins for safety has undergone revision due to previous uncertainty about the process and some applications returning very conservative results. Section 4.3.1, has been retitled to Calculation Method and, provides a simplified approach with further description of how to appropriately sum times on a number of activities.

Revision of the flow charts resulted in changes where the process could be simplified or better represented. For example, Chart 2 has been simplified from 11 tasks down to 5.

With the advent of easy to access comprehensive digital mapping tools such as Google Maps™, FBIM now provides a methodology to use these tools for calculating more accurate travel times rather than a fixed distance multiplied by speed method. Changes to traffic conditions and urban development should also be considered.

There are many changes throughout the document and users are encouraged to review the entire guideline including the associated dataset. Register with

AFAC to receive updates to the *FBIM Manual* and *FBIM Dataset*.

### Keeping fire services on the scene

No consideration of the effects of a fire is complete without understanding the role of the fire brigade that inevitably responds to deal with the situation.

Even if the theoretical analysis shows that fire brigade response is not required, community expectation and current practice dictate their mandatory attendance—even if only to reset systems, check for fire spread or extinguish a sprinkler-controlled fire. When undertaking any performance provision that involves the fire brigade turning up, an FBIM would need to be undertaken.

While there is consistency across fire brigade operation at fires, there are many fire brigades across Australia broken up into regional, inner suburban, urban and rural fire brigades with variances in environments, resources and staffing. This means the responding brigade is consulted in the FBIM development so data and understanding of those variances are reflected in the analysis. ■

**The *FBIM Manual* and supporting resources are available on the AFAC website at: [www.afac.com.au/insight/doctrine/article/current/fire-brigade-intervention-model-manual](http://www.afac.com.au/insight/doctrine/article/current/fire-brigade-intervention-model-manual).**

# UPDATE ON FIREFIGHTING FOAMS AND NEW INDUSTRY GUIDANCE



PHOTOS: SHUTTERSTOCK  
The Federal Government is seeking to establish a consistent national approach to the use of PFAS and the phase-out of long-chain C8s that are persistent organic pollutants.

Australian efforts are similar to international initiatives to limit the use of chemicals that are listed under the Stockholm Convention on persistent organic pollutants.

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 **BRETT STAINES**

Chair, Technical Advisory Committee for Special Hazards Fire Protection Systems (TAC/11/22)

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 poly-fluoroalkyl substances (PFAS). The European Chemical Agency is reviewing a German proposal on undecafluorohexanoic acid (PFHxA). And Fire Protection Association Australia (FPA Australia) has released its latest version of Information Bulletin (IB-06) Selection and use of firefighting foams.

## Australian Government PFAS taskforce

The federal Department of Agriculture, Water and the Environment has set up a taskforce that is actively engaging with all industries to understand how PFAS

are used and why. The taskforce aims to establish a consistent, Australia-wide approach and identify any essential uses, which FPA Australia considers includes firefighting foams.

Their pragmatic and consultative approach has been well received. The current National PFAS Position Statement appears to take a similar approach to FPA Australia's Information Bulletin (IB-06). It recommends the phase-out of long-chain C8s that are persistent organic pollutant (POP) listed, or soon to be POP listed, under the Stockholm Convention (i.e. perfluoro-octanyl sulfonate [PFOS], perfluoro-octanoic acid [PFOA] and perfluorohexane sulfonate [PFHxS]), but allows for the continued use of short-chain C6 foams.

FPA Australia is helping the PFAS taskforce understand how and why C6 PFAS provides critical fire life safety uses in firefighting foams. They encourage all stakeholders to similarly engage with the taskforce to ensure these essential C6 foam agents are retained for effective tackling of major Class B fires.

## German proposal to restrict PFHxA

A German proposal made to the European Chemical Agency in December 2019 suggested restricting

PFHxA, its salts and related substances from use in Europe, without the advantage of considering the findings from recent US National Fire Protection Association (NFPA) and Naval Research Laboratory (NRL) scientific studies (see IB-06 update on page 39).

Any such restriction could compromise existing safety levels for protecting fire life safety, critical assets and our environment from unnecessary harm. This is not just within Europe, but also in Australia and potentially worldwide, as Europe is a major producer of both C6 and F3 foam agents. These agents are necessary to swiftly, effectively and reliably combat major flammable liquid fires.

Despite this proposal arguing that PFHxA should be restricted on the basis of its very high persistence and mobility in the environment, PFHxA is not toxic or bioaccumulative (i.e. does not accumulate within organisms). The proposal itself confirmed that "current exposures and emissions [of PFHxA] to the environment from manufacture and use do not pose a risk for human health at the moment.

This aligned with Australian Government advice from the National Industrial Chemical Notification and Assessment Scheme (NICNAS). The

advice similarly identified that while C6 PFAS are persistent, they are neither bioaccumulative nor toxic, and concluded that "C6 chemicals are not considered to pose an unreasonable risk to workers' health" and "the public risk from direct use of these chemicals is not considered to be unreasonable".

As such, FPA Australia made a submission arguing (as per version 3 of IB-06) that PFHxA should not be restricted for firefighting foams, because C6 foams are essential for use in major hazard facilities. In addition, both NFPA and NRL research concludes that current commercial fluorine-free foams (F3s) are not viable alternatives.

FPA Australia's submission also recommended only F3s (or surrogate liquids) should be used for training and system testing of foams. And all firewater runoff/effluent, whichever foam type is used, must be contained, collected and treated. This avoids PFAS from firefighting foams and/or firewater runoff reaching the environment, which current strict management controls prevent from happening.

## Key changes in version 3 of IB-06

This comprehensive update of FPA Australia's Information Bulletin IB-06 (published May 2020) 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.

## New section on existing and proposed regulations

The biggest change in version 3 of IB-06 is a new section that explores existing and proposed regulations locally and globally.

Locally, it covers Queensland's Environmental Management of Firefighting Foam Policy and SA's Environment Protection (Water Quality) Policy. These policies restrict and ban fluorinated firefighting foams, respectively. However, it is important to note both Queensland and SA allow for well-justified exemptions where F3s are proven unsuitable.

The new section also discusses the PFAS National Environmental Management Plan, which provides evolving guidance on how best to identify, monitor and respond to PFAS contamination, and NICNAS, including their abovementioned assessment of C6 PFAS chemicals.

Globally, this section highlights different policies implemented and

proposed in Canada and various states in the US. This adds to existing information on the US Environmental Protection Authority PFOA stewardship program, and the European Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EU) 2017/1000. Both of these focus on elimination of legacy long-chain C8 PFAS (including PFOA) 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 now includes PFOA 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 fluorine free firefighting foams' 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.

Historically, heptane has acted as an effective equivalent for gasoline in these fire tests using fluorinated foams (including C6 aqueous film-forming

# FIRE SAFETY SHOULD BE ABOUT VALUE, NOT COMPLIANCE

PHOTO: FPA AUSTRALIA

foams [AFFFs]). It has been assumed this was also the case with F3s. However, due to the very different nature of these foams, the F3s tested required significantly greater application rates and densities with higher expansion ratios to extinguish gasoline than the C6 AFFF baseline. Even higher application rates were required for E10 fuel (10% ethanol mixed in gasoline).

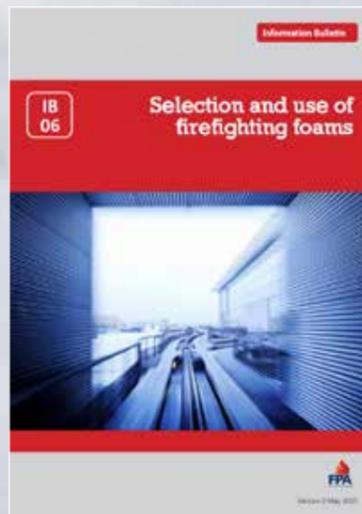
Heptane is a very specific, consistent fuel specification ideal for fire testing. But recent NFPA and NRL tests have shown F3's fire performance on heptane does not represent its inferior fire performance and burnback capabilities on gasoline and E10. The NRL research identified the reason for this: four aromatic components within gasoline that destabilise and collapse the foam blanket. Some F3s were more vulnerable than others, but all suffered significant adverse effects.

NRL also investigated a surrogate test fuel for gasoline. Using 25% trimethylbenzene in heptane produced similar fire test results to those using F3s and C6 AFFFs on gasoline. As such, the possible use of 25% trimethylbenzene in the future may continue to allow for one test fuel to be used to cover multiple fuels, applications and foam types (including F3s and C6 AFFFs).

These insights should inform improvements in firefighting-foam-testing approval standards, and need to be considered when selecting and using firefighting foams.

## New and updated information on remediation of PFAS-contaminated soil and water

The information on soil and water remediation includes both currently



effective and developing technologies to adsorb, separate and concentrate PFAS to minimise volumes of firewater runoff and washwater (from cleaning systems), therefore reducing the cost of destruction. It also highlights different technologies for PFAS breakdown or destruction, the following of which are available in Australia: cement kiln destruction, plasma arc incineration and thermal desorption.

Further technologies to degrade PFAS being explored include the use of ultraviolet light, sound waves, carbon nanotubes, ionic fluorogels, and colloidal-activated carbon to provide soil barriers.

Alongside this information is guidance on cleaning out/changing over

existing legacy C8 fluorinated foams to alternative foams (either C6 or F3). Systems must be adequately cleaned of legacy foam residues, with all washwater contained, collected and disposed of according to local regulations.

## Recommended best practice

The fundamental recommendations of IB-06 have not changed; they have simply been updated to reflect the most recent scientific research.

Most importantly, IB-06 and its recommendations continue to provide a holistic, risk-based approach to the selection and use of firefighting foams. Regardless of whether C6 or F3 foams are best suited for specific applications, all relevant factors must be considered. These include fire life safety, effective firefighting performance, environmental impacts and system compatibility.

A key part of this approach is ensuring that evidence of suitability is obtained to confirm that the preferred foam is suitable for the:

- ◆ specific fuels stored/used
- ◆ systems and equipment being used
- ◆ site conditions, notably the year-round extremes of ambient temperature likely to be encountered in realistic incident scenarios.

To avoid compromising existing protections of fire life safety, critical infrastructure and environmental impacts, the choice of foam must be compatible with expected expansion ratios, forceful application, fuel depth and constrictions of system design.

Information Bulletin (IB-06) Selection and use of firefighting foams is freely available under the Technical Documents section of the FPA Australia website at [www.fpa.com.au](http://www.fpa.com.au).

## Nobody benefits when fire protection is seen solely as a compliance activity.

BY PAUL WATERHOUSE

Fire Protection Association Australia

Regular maintenance and testing is about more than just complying with government requirements.

Recently, a fire safety assessor reported that he had come to an impasse. A building under his care needed a five-year 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 when 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 fine 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 endangered life safety and the property itself.

If the system were to fail when the fire brigade was in attendance, at the very best it could result in damage to the building—and at worst, it could result in

the death of a fire fighter or an occupant. And you could guarantee that if the latter were to happen, the coroner would not be lenient with anybody!

This scenario can be expected from a culture that has allowed fire protection to be seen purely as a compliance cost, rather than a benefit to the property. It results in the common complaint from fire safety practitioners of a race to the bottom, as owners and managers seek cheaper, less experienced, less scrupulous people to sign paperwork that says that everything is OK, without conducting the appropriate assessment.

The compliance lens does not deliver better, safer buildings. In fact, looking at fire safety solely as a property management line item obscures a bigger, more important message.

The modern building contains several features designed to protect life and property. Each of these increases the resilience of a building, while significantly reducing the potential for property damage and the risk of injury and death. They provide peace of mind not only to property owners or managers, but also to building occupants, fire brigades and the broader community. What is generally less understood, however, is the value such elements bring to a building if they are properly designed, installed, operated and maintained.

Research carried out by Underwriters Laboratories Inc in the United States found fires in apartments with modern furnishings will flashover in only three

minutes and 40 seconds, compared to 29 minutes for those with older furniture. 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 the CSIRO 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. All 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.



Removed by fire, there was no ground cover to slow the rain or channel it into gullies. Water gathered speed and sediment as it churned down a landscape normally held together by plants.

PHOTO: NEAL HERBERT, DOI

# 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**  
US Department of Interior

The day began routinely at the base camp in Swifts Creek, Victoria, a farming and timber town of a few hundred souls. Apart from 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 organized 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

envy of nearly every American firefighter I met. We made a quick stop at the Swifts Creek depot, conveniently located next to the Swifts Creek Bakery. We had been encouraged to help support the local economy. What better way than by grabbing second breakfast? A flat white and a meat pie to go.

The day's objective was the continuation of a previous assignment marking, felling and clearing hazard trees along the Benambra-Corryong Road in the 'Australian Alps'. Though smaller than their Swiss cousins (the

highest peak is 6,600 feet above sea level), these mountains are the only part of Australia where deep snow can be found in winter.

The drive to the worksite was stunning for the colour. In just a few weeks, rains had transformed the Australian landscape from crispy brown to verdant green. As we climbed into the mountains and onto the firegrounds, the scene changed instantly to a blackened expanse of eucalyptus. Here, the forest burned either too recently or too intensely: there was no sign of regrowth.

Recent landslides fanned across the road in several spots. The road was closed to the public, so the only traffic was crews like us working to make it safe. One slide slowed us to a crawl as we picked our way across sharp rocks. A truck blew a tyre.

"That's the sixth flat we've had," I was told. Earlier I had heard an American firefighter describing driving in Australia this way: "I grew up on a ranch. I've never spent so much time driving in four low as I have in the last few weeks." Fingers were crossed as the lug nuts were tightened on the last spare that would fit the truck.

Well-caffeinated, well-fed and restless from driving, the crew geared up quickly once we arrived. Within minutes, yellow shirts darted through the forest, assessing trees and painting a big yellow K (for 'killer') on anything that looked like it might fall on the road in a future storm.

Behind the painters, five teams of two—a faller and a swamper—fanned out and began cutting. The fallers sized up each tree, cleared a work area and escape route, and yelled out warnings while making a series of cuts to drop the

tree. The swampers cleared brush out of the way and carried a collection of tools, gas, oil, food and water as they moved down their assigned stretch of road.

Before we left the worksite, the crew grabbed a bite to eat and refurbished their saws. They sharpened chains and cleaned air filters because readiness is part of the firefighter code.

All day it had been the kind of weather you do not even notice because it is so nice: sun raking through the trees below blue skies dotted with friendly looking cumulus clouds. But as we headed down the mountain, it became clear the weather was about to change. Lightning strobed the dark face of an approaching storm front.

The rain arrived without preamble. A few drops hit the windshield and then instantly a gush of water and hail made it impossible to see the road at all. We stopped. I climbed out to find water running everywhere. Removed by fire, there was no ground cover to



PHOTO: NEAL HERBERT, DOI

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

slow the rain or channel it into gullies and culverts. It was sheeting off the hill above us and bringing a bunch of soil with it. The view was even more alarming looking down from the road cut. It felt like scouting a chocolate rapid, the water gathering speed and sediment as it churned down a landscape normally held together by plants.

Then a radio call. One of the larger landslides had so much water flowing over and through it that it could no longer be crossed. The flood was also eating away at the road, biting off big chunks so that the two-lane road was slowly shrinking to one. And part of our group was stuck on the other side.

Then someone radioed to say that their vehicle was suddenly resting on not one, but two flat tyres. It felt like the beginning of an epic story that would require a lengthy after-action review. But this situation was no match for 20 skilled firefighters with hand tools and saws. The flat tyres were replaced. The rain subsided enough that with a little scraping and shovelling we were on the road again and back in time for dinner.

Despite the successes and near misses of the day, my thoughts kept returning to the flooding. How water can ravage a recently burned landscape, and how much recovery lies ahead for Australia? We have had bad fires, and bad fire years, in the US. The Australian bushfires burned four times more than we ever have—more than 40 million acres.

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 spotlights. 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. ■

Rainwater flowing over landslides exacerbated the environmental and infrastructure damage created by the historic Australian bushfire season.

PHOTO: NEAL HERBERT, DOI



# 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.

BY **CHRISTINE PURVIS**

DECO Australia

**H**orrific tragedies such as the 2017 Grenfell Tower fire in London, the 2014 Lacrosse building fire in Melbourne, and the unprecedented 2019–20 Australia-wide bushfire crisis—which damaged or destroyed more than 5,000 buildings—have highlighted the importance of choosing non-combustible building products that will not burn, ignite or increase the spread of fire. This comes as nationwide audits of buildings with combustible cladding have made fire engineers and certifiers more closely scrutinise all forms of cladding. Due to non-compliance with Australian Standards of building materials, bushfire victims in regional areas are now finding they are underinsured to replace their homes. To identify safe, compliant solutions for rural and suburban Australian homes, fire engineers, certifiers and assessors need to evaluate the combustibility of different building products.

## 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 tower fires across the globe.

In a 2019 statement, Queensland Minister for Housing and Public Works Mick de Brenni likened installing ACPs on Australian buildings to seeing them "clad in solid petrol". One square metre of HDPE is equivalent to five litres

Tragedies such as Grenfell and the recent bushfires are leading people to re-examine the suitability of certain types of cladding and other materials in construction

of petrol, and when heated, HDPE releases 25 times the amount of heat it takes to ignite it—allowing it to rapidly ignite surrounding particles 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 timbers 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 cools 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 DECO 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-making bodies and fire safety professionals seek ways to make Australian homes more firesafe, 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.

Although it is not indestructible, solid aluminium cladding will not directly contribute to, or exacerbate, the spread of fire. If installed correctly, it provides a fire-resistant option that complies with bushfire and other regulations.

Where residential buildings are concerned, increasing awareness among decision-makers of the non-combustible products that are available, including cladding, can be an effective strategy in ensuring fire professionals' insurance for professional indemnity is unaffected.

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-story buildings, and could present the solution to the cladding crisis. ■

## HOW SOLID ALUMINIUM COMPLIES WITH AUSTRALIAN STANDARDS

The NCC sets out requirements that cladding products must comply with to prove their non-combustibility and suitability for use on residential or bushfire-zone buildings. These standards involve testing by independent National Association of Testing Authorities-accredited laboratories, such as the CSIRO, to ensure they satisfy the NCC requirements for compliance.

### AS 1530.1

Australian Standard AS 1530.1 assesses the combustibility of building materials. To comply, materials must undergo

combustibility testing, which involves immersion in a furnace and exposure to direct flame. Solid aluminium products can be exposed to these conditions without flaming or combusting, allowing them to satisfy test criteria and be deemed non-combustible.

### AS 1530.3

Australian Standard AS 1530.3 involves testing building materials to determine whether they will ignite, spread flame, or release excessive smoke or heat. A gas-fired ceramic panel is gradually moved closer to test samples to assess whether they will spark, smoke, overheat or behave

in a manner that could contribute to a fire. Solid aluminium's ignition, smoke and evolved heat satisfy the criteria required to comply with this Standard.

### AS 3959

Australian Standard AS 3959 outlines the requirements of building materials to be used safely in bushfire-prone areas. Combustible materials must not be used in BAL 40 or BAL FZ, the highest-risk bushfire areas. Solid aluminium, which complies with NCC requirements as a non-combustible material, can be safely used in BAL 40 or BAL FZ areas.

PHOTO: SHUTTERSTOCK



PHOTO: CHRISTOPHER NEWBERRY



PHOTO: LONDON FIRE BRIGADE



PHOTO: LONDON FIRE BRIGADE



PHOTO: LONDON FIRE BRIGADE



PHOTO: BETTY

## KING'S CROSS STATION FIRE, LONDON—1987

BY **BARRY LEE OAM**

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. ■

**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).



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BY **JESSICA TEMPLE**

Technical Administrator—Projects and Standards, FPA Australia

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**FP-002 Fire detection and alarm systems**

The AS 1603.17, AS 4428.3 and AS 4428.16 revisions are currently at committee ballot. Work on the revision of AS 1670.6 continues and the recently approved projects 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 28 July. The recently approved project to revise AS 2419.1 kicked off in early May.

**FP-011 Special hazard fire protection systems**

Work progresses on the revisions of AS 3772-2008 and AS 4587-1999.

**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 GPG-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/4/8/9 Fire sprinkler and hydrant systems, tanks and fixed**

The TAC continues to monitor and provide input to current Standards Australia projects.

Work continues on the Good Practice Guide on hydrant commissioning and the pumpset checklists.

**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.

PHOTO: 123RF



**FPA AUSTRALIA TECHNICAL WEBINARS**

In May, Fire Protection Association Australia commenced a program of continuous professional development webinars covering various aspects of the fire protection industry.

Recent events have covered dampers, smoke detection, pressurisation systems, materials testing, warning systems, fire doors and digital business.

Some of these have been drawn from presentations and content that was due for Fire Australia 2020, while others have been created to address specific needs identified through the roll-out of the Association's Fire Protection Accreditation Scheme.

A full list of upcoming events can be found at the FPA Australia website: [www.fpaa.com.au/events.aspx](http://www.fpaa.com.au/events.aspx)

**RESEARCH WEBINARS**

Throughout 2020 the Bushfire and Natural Hazards CRC is conducting webinars on key research findings.

A full list of upcoming webinars can be found on the Bushfire and Natural Hazards CRC website at [www.bnhcrc.com.au/events](http://www.bnhcrc.com.au/events)

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**Ray Johnson**  
ACT Chief Police Officer Ray Johnson has stepped away from his police role to take up the newly created position of Deputy Commissioner of the ACT Emergency Services Agency (ESA) following the Territory's challenging bushfire season. In this role, Mr Johnson will lead the review of the 2019–20 bushfire season to evaluate the effectiveness of ACT ESA's operational response. He will also recommend opportunities and strategies to prepare for and respond to emergencies in the future.



**Joe Murphy**  
ACT Rural Fire Service Chief Officer Joe Murphy retired on 10 April 2020. Mr Murphy worked in emergency services for 33 years, including more than 21 years with ACT Fire and Rescue. Over the course of his career, he developed systems and software and led many programs, including the called 'Fire Ed' program for kindergarten children, which still runs today.



**Tony Jarrett**  
NSW Rural Fire Service (RFS) Community Engagement specialist Tony Jarrett is stepping down from his role after 12 years with the service. Mr Jarrett has played a significant role in promoting bushfire safety and awareness in communities, with a focus on schools and young people. He has been instrumental in the delivery of bushfire safety and disaster-resilience education programs across NSW and continues his research in this field.



**Mark Brown**  
ACT Fire and Rescue Chief Officer Mark Brown has retired after a career spanning more than 39 years as a career firefighter, including five years in the ACT and over 30 years at Fire and Rescue NSW. Mr Brown passionately advocated for greater inclusion and diversity in the ACT emergency services by breaking down barriers to Indigenous and female recruitment and was a recipient of the Australian Fire Service Medal in 2009.



**Nathan Semos**  
Nathan Semos has joined Fire Protection Association Australia as Chief Operating Officer. Formerly of the Hendry Group, Mr Semos brings to the roles a wealth of experience in the fire protection, facility management, certification, routine maintenance, and building sectors. In his dual role, he will be working with the Board and Executive to deliver new strategies and digital solutions to ensure the Association's ongoing success.



**Steve Warrington**  
Steve Warrington has resigned as Chief Officer and CEO of the Country Fire Authority. He began his service as a CFA volunteer at Chelsea brigade in 1978 before joining staff as a career firefighter in 1983. He served through the Ash Wednesday and Black Saturday bushfire disasters and was awarded the Australian Fire Service Medal in 2017. Mr Warrington was appointed Chief Officer in 2016 and accepted the concurrent role of CEO in 2019.

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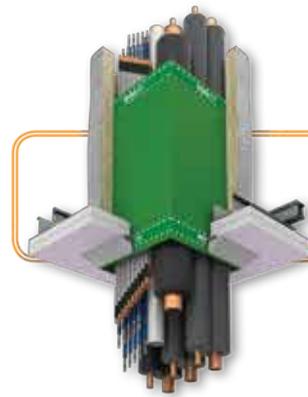
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## NEW TEST APPROVALS

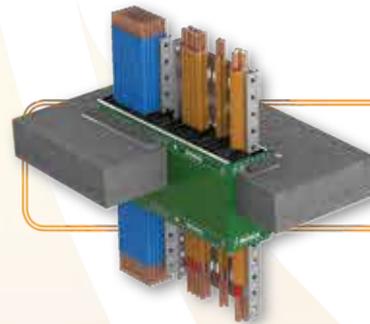
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- TPS, Power and Mains Cables
- Electrical & NBN Conduits
- Data & Comms Cables



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