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National Emergency Management Agency

Australian Institute for
Disaster Resilience



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Contents

1. The Second National Action Plan: Australia's guide to disaster risk reduction
2. The contraction of pencil pine populations in northern Tasmania
3. Navigating Emerging Hazards- Research and Technology in Fire and Hazmat Response
4. Testing Bushfire Evacuation Assumptions in East Gippsland using SAFER and SEEKER
5. Enhancing Bushfire Evacuation Preparedness Through Scenario-Based Insights- A Case Study from Victoria
6. Operationalising Bushfire Evacuation Modelling
7. Landscape metrics for a renewed standard of cover
8. The expanding problem space of emergency management and the limits of traditional risk assessment
9. The Assurance Advantage Unlocking Deeper Insights for Bushfire Risk Management in Western Australia
10. From Guidelines to the Ground Supporting Local Government Bushfire Risk Management
11. Tsunami Risk Management in Western Australia: The culmination of partnerships and cutting-edge science
12. Predicting Health Service Utilisation Increases During Heatwaves in Queensland- A Vulnerability Analysis
13. Spark Operational - National Bushfire Simulator
14. Fire-Fighting Water Demand for Emerging Hazards on Renewable Energy Projects in Australia
15. Rethinking Accessibility- Addressing Information Access Barriers in Preparedness and Flood Risk Information
16. Assessing Fire Severity and Extent Across Simultaneous Hazard Reduction Burns in the Blue Mountains
17. Indigenous disaster resilience research
18. What's New in Knowledge
19. Standardising Fire Behaviour Analysis- A cross-jurisdictional approach to enhanced interagency collaboration in Western Australia
20. NSW Flood Insights innovation in educating flood risk management
21. The impact of heatwaves on mental health and the urgent need for awareness
22. Mitigating Risks with Solar PV and Residential BESS
23. State Bushfire Risk Assessment: Incorporating a Changing Climate
24. An integrated land management strategy to reduce bushfire risk to community and increase biodiversity
25. Junction Fires Multiscale Analysis Using Fully Physical Modelling- Fire Behaviour, Scaling Laws, and Risk Assessment
26. Identifying and defining landscape dryness thresholds for fires across Australia
27. AFAC Data Governance
28. Will the revolution be decentralised, Risk and resilience in the future energy system
29. Improving free topography data for more reliable flood modelling in data-scarce regions
30. Investigating surface-to-crown fire transition- Impact of wind speed and Crown base height
31. Daily temperature records across Australia are changing, with coastal and inland areas responding differently
32. Impact of firefighting shifts on heart rate variability and sleep quality of firefighters
33. Rapid Intervention Teams- A Lifesaver in Firefighting
34. Rural Respiratory Protection - A modern approach to a historic health problem
35. Rethinking Bushfire Resilience with Geospatial Data
36. Building Resilience- Harnessing Location Intelligence for Flood Risk Mitigation
37. Fire Ignition, Suppression and Impact Extending the AFDRS
38. Supporting the personal impact of frontline disaster response on Australia's first responders
39. Strategic fire service management of a global sporting event
40. The impact of mass gathering events on emergency services and rural communities
41. Data Only Matters if You Use It Leveraging Fire Danger Data to Shift Behaviours
42. Fighting the Enemy You Can't See Lessons From Deploying Personal Gas Monitors to our Frontline

43. Smoke and Resilience Evaluating Health Impacts and Collaborative Solutions for Firefighters
44. Be Prepared, Not Scared
45. Communicating with remote communities during and after emergencies: the challenges, the learnings, the solutions
46. Looking Back to Move Forward- The Path to AI-Enabled Outcomes
47. Smoke Alarm Action Day
48. Balancing Fire Safety and Sustainability The Role of Natural Ventilation in Modern Buildings
49. Disaster Resilience Building & Culturally Diverse Communities- Highlights from a 2-year Project in Queensland
50. Stakeholder Perspectives of Alternative-water Urban Landscapes
51. AFAC Standards
52. Response to Electric Vehicle Incidents Foundation Training Course
53. Elements that influence experimentation may change the pace and direction of its impacts
54. Changing landscapes, shifting meanings- settler representations of Cultural Fire
55. ARENA - Streamline electronic Flight Operations Returns with ARENA (eFOR)
56. Irrigated Green Firebreak Research to Complement Wildfire Management in Queensland's Wildland Urban Interface
57. How do we fuse multi-sensor remote sensing data to precisely detect active fires in near real-time
58. Australian Journal of Emergency Management
59. Ecosystem service economy aligns with culturally-aligned, resilient Forever Industries
60. NAFC's Multi Role Capability
61. Connecting to Jagun - a community approach to reduce bushfire risk through cultural land management
62. Insights into Temporary and Emergency Accommodation
63. Reflections on four years of empirical evaluation of bushfire detection technologies
64. Categories of fire- a four-category system for describing bushfires by resource requirements
65. Crisis to Calm- Co-designing a mental health intervention for young people affected by disasters
66. Designing disaster recovery for impact
67. Principles for delivering disaster recovery programs through schools
68. Empowering the future Involving children and young people in emergency planning
69. A POLICY REVIEW POTENTIAL FOR HARMONISATION
70. Preventing bystander drowning through community co-design of public rescue equipment (PRE) in Venus Bay, Victoria
71. Tailoring evaluation approaches to organisational requirements?
72. Lessons identified and learned from a community-based after action review
73. Co-designing emergency communications with multicultural communities in regional Victoria
74. Designing for enhanced safety- A Human-Centered Design conceptual model informing future wearable technology
75. Bushfire Safer Place and Last Resort Refuge Review Project 2024-25
76. Ethics in the Flames- Navigating Philosophical Questions in Fire Safety and Incident Management
77. SPARK Your Systematic Review- Automating Literature Collection, Filtering, and Topic Discovery with Python
78. Understanding conflict in disaster recovery collaborations
79. Optimisation might help us to improve fuel treatment planning by over 250%
80. Identifying community preparedness gaps for effective emergency planning
81. Preparation for Disasters
82. Insights from place-based resilience building in Victoria
83. The power of investing in people and places
84. Supercharging local backbone organisations
85. Black Summer, 5 years on
86. Embracing AI and Emerging Technologies for Fire and Hazmat Safety
87. Re-transforming Emergency Management Capability Building in the Wheatbelt and Goldfields-Esperance Regions
88. A Model for Sharing Firefighting Knowledge
89. Innovative Vegetation Management for Disaster Response and Recovery Leveraging Technology, Expertise and Collaboration with Industry
90. The renewable energy disruption

91. Harnessing Volunteer Expertise- Driving Innovation, Empowering Leadership, and Transforming Emergency Service Delivery Through Advisory Councils
92. Ideas to Action How Research and AI accelerates collaboration and innovation in flood emergency management
93. Australia's national Social Capital and Social Infrastructure Measurement Framework
94. Australia's Riskscape in 2024-25
95. Australian Disaster Resilience Knowledge Hub
96. Australian Disaster Resilience Handbook Collection
97. 'Sharing Connection' - AIDR's Indigenous Artwork
98. Innovating Lifesaving- Bridging Local Expertise with Global Technology for Safer Beaches
99. A Conceptual Framework for Blockchain-Enabled Collaborative Flood Insurance- A Solution for Prompt Flood Recovery
100. Creating Future-Ready Emergency Management and Community sectors using Transformative Scenarios for a Climate-Challenged World
101. Early Career Fellowship- Guiding Law Reform for Australia's fiery future
102. 'If you build it, they will come' - An SES Unit 30 years in the making
103. Introducing the Bushfire Centre of Excellence Partnership Model: How we partner for research
104. Financial Counselling for Disaster Resilience- Presenting the Financial Counselling Disaster Preparedness, Response and Recovery Framework
105. Learning and Adapting for Resilience A timeline of the Voluntary Home Buy-Back Program
106. Cultivating a new model for community-centred resilience
107. Home Fire Sprinkler Coalition Strategy
108. Embracing Diversity and Inclusion at NSW SES
109. Changing the Way Our Community Thinks- Fostering Community Awareness for Disaster Resilience
110. Enablers of collaboration between disaster management and community
111. Housing, Homelessness, and Disasters: Toward Systemic Solutions
112. Strength in partnership- Embedding Aboriginal leadership in disaster resilience and recovery
113. The right to mental health for internally displaced persons due to sudden-onset climate disasters
114. EviMaPS Uncovering current approaches and next steps for disaster-related mental health and psychosocial support (MHPSS)
115. What happens to mental health trajectories across multiple disasters, A decade of data from Australia
116. Equip- Building Psychological Preparedness and Community Resilience for Disasters in Rural Australia
117. Community-Led Response to Disasters The Role of Community Support Hubs
118. Housing Options Tool
119. Leveraging AI for Volunteer Engagement and Efficiency The Volunteer Hub ChatBot
120. Leading for Better Mental Health - creating generational change
121. Our journey towards reconciliation
122. Utilising the voice of the community - Key Lessons in Multicultural Fire safety Resource Development
123. Delivering Post-Disaster Growth Through Community Collaboration
124. The Maribyrnong Catchment Case Study- Building Community Preparedness for Future Challenges
125. Embracing Radical Transformation The EV Platform Harnessing the Power of Community in Emergencies
126. Beyond Whisper Networks- How Community Communication Ecologies Evolve During Disasters
127. Digital cognitive-behavioural therapy-based treatment for insomnia, nightmares and post-traumatic stress disorder symptoms in wildfire survivors
128. Mass mobile outages- a coordinated response
129. Complacent Communities Conundrum Building a collaborative culture for proactive bushfire resilience
130. Strengthening Resilience- Integrating Gender-Based Violence Prevention into New Zealand's Disaster Response Laws
131. Confronting assumptions and the challenges of change: children's fire education for the next generation
132. Protecting Our Littlest- Enhancing Fire Safety and Burns Prevention in 0-4 Year Olds

133. The Role of Socio-Cultural Practices in Shaping Disaster Response- Perspectives from Indonesian and Australian Professionals
134. Rising Above Helping to Create a Safe, Positive, and Inclusive Fire and Emergency New Zealand
135. Policy impact on household perceptions of resilience, adaptation intention and wellbeing
136. Systemic Disaster Risk
137. AIDR Knowledge Centre
138. 10 years of AIDR
139. Why are disasters not natural?
140. Social assets- our building blocks for disaster resilience
141. Emergency Services and Educational Institutions partnering to develop safe and resilient Culturally Diverse Communities
142. A new recovery framework
143. Youth in Emergency Services Strengthening Future Responders Through Engagement and Collaboration
144. We need to think about preparedness and resilience more broadly and holistically
145. Using Images From Yesterday to Make the Future Now
146. Building Coastal Resilience in Perth's Communities
147. Are we doing our best for childbearing women in? Australian disaster management
148. Building Better Disaster Resilience One Kitchen Table at a Time
149. Changing the rules of the game- Rethinking the organising of recovery work
150. Disability inclusion and disasters
151. Transforming how we build expertise together- Building a cross-border Disaster Recovery network for the future
152. Disaster Recovery and Beyond
153. The impact on and changing nature of social capital through multiple disasters
154. The 'Butterfly Effect'- Transformative Education For Disaster Resilience
155. Inviting the hearing sector into the emergency preparedness space



The Second National Action Plan: Australia's guide to disaster risk reduction



Sharing responsibility for disaster risks between all governments, industry, communities and individuals is crucial to build a more resilient, safer Australia into the future. The Second National Action Plan enables this.

Our context

Australia's disaster risk environment is complex. Recent cascading and compounding disasters have challenged us all. The decisions we make about how and where we live and work can create, amplify or reduce risk. As a nation, we recognise the importance of reducing disaster risk and enhancing resilience beyond avoiding loss and damage. Risk reduction achieves substantial investment return, provides significant co-benefits, and enables all Australians to be safe and to prosper.

Our guiding frameworks

The Sendai Framework for Disaster Risk Reduction 2015-2030 is the key international framework driving disaster risk reduction. It seeks to achieve a substantial reduction of disaster risk by 2030. Australia's National Disaster Risk Reduction Framework guides our efforts to reduce disaster risk in line with the Sendai Framework. Australia's National Mid-term Review of the Sendai Framework showed that while we have made great progress towards this goal, more work is needed.

The development of National Action Plans

The Second National Action Plan, released on 25 August 2023 by Australian Emergency Management Ministers, articulates the action needed in Australia to achieve the Sendai Framework Goals and Outcomes.

The First National Action Plan, released in 2020, was a starting point. It listed government initiatives aligned to the National Disaster Risk Reduction Framework already underway, championing shared responsibility and coordination across government portfolios.

The National Emergency Management Agency, in partnership with the Australian Institute for Disaster Resilience and CSIRO, invited stakeholders from across the Australian community – not just from government or the traditional emergency management sector – to shape the Second National Action Plan.

Purpose of the Second National Action Plan

The Second National Action Plan is for all Australians – individuals, communities, organisations and sectors, and governments. By effectively coordinating and aligning action, this National Action Plan aims to reduce systemic disaster risk to create stronger, more secure and more resilient communities before, during and after disasters.

The Second National Action Plan seeks to:

- increase our understanding of disaster risk and provide a national picture of risk
- deliver inclusive plans at the household, community, regional and state levels to mitigate those risks
- inform investments so they work to reduce disaster risk and deliver co-benefits across social, physical and economic domains
- empower all Australians to actively participate in risk planning and the decisions that impact them.

The Second National Action Plan provides direction to drive disaster risk reduction across all sectors, in all decisions, by all Australians. Disaster risk reduction is a shared responsibility. While individuals and communities have their roles to play, they do not control many of the levers needed to reduce systemic disaster risks. Governments – whether local, state or federal – have a key role in disaster risk reduction, as does industry.

All stakeholders have a role in implementing this Plan and building a disaster resilient Australia for future generations.

Disaster risk reduction: a shared responsibility

This Plan is designed for anyone who makes decisions – as an individual, across contexts and sectors, at national, state and local levels.

The Plan should not prompt the question 'who will do this?' but rather 'how can my sector, organisation or community act within our area of responsibility?'

National Disaster Risk Reduction Framework

Second National Action Plan

3-5 years

All of society

Drive and align national actions

2030 vision for disaster risk reduction in Australia

All sectors of society:

- make disaster risk-informed decisions,
- are accountable for reducing risks within their control, and
- invest in reducing disaster risk to limit the cost of disasters when they occur.

2030 disaster risk reduction goals

Take action to reduce existing disaster risk

Minimise creation of future disaster risk through decisions taken across all sectors

Equip decision-makers with the capabilities and information they need to reduce disaster risk and manage residual risk

Framework Priorities

1

Understand disaster risk

2

Accountable decisions

3

Enhanced investment

4

Governance, ownership and responsibility

Outcomes developed through synthesis of consultation, global best practice and outcomes of Australia's National Mid-term Review

Ambitious national actions provide authorising environment and drive collective action towards achieving outcomes

Everyone comes to the Plan with different priorities, from different contexts and levels of maturity

State and federal governments

Local government and regions

Private sector and critical infrastructure

Philanthropic and community sector

Research and academia

Communities and people

Scan the QR code to learn more about the Second National Action Plan



How can my sector, organisation or community get involved?

Scan the QR codes below to learn more about how NEMA is supporting all Australians to get involved.

State and federal governments



Disaster Ready Fund Round 2 2024-25

The Australian Government is providing up to one billion dollars over five years through the Disaster Ready Fund (DRF), from 1 July 2023.

Round Two of the DRF will deliver up to \$200 million of Australian Government funding for disaster risk reduction and resilience initiatives, with funding matched by state, territory, local government and other applicants, where possible.



Local government and regions



Strengthening Livingstone Shire Disaster Recovery and Resilience

Livingstone Shire Council has faced multiple disasters recently, including cyclones, bushfires, hailstorms, on top of the challenges brought by the pandemic. Despite the challenges, the community has shown remarkable commitment to recovery. The Black Summer Bushfire Recovery Grants Program has provided the much-needed support and resources to strengthen the Livingstone Shire's disaster resilience.



Private sector and critical infrastructure



Re-connecting the Kimberley region with the re-opening of the Fitzroy River Bridge

The Fitzroy River Bridge has been officially re-opened less than a year after it was destroyed in the devastating floods of December 2022-January 2023. The bridge, which is the main route for travel and freight between the East and West Kimberley region, has now been re-built six times stronger than the old bridge, leaving the region more resilient to future disasters.



Philanthropic and community sector



Building flood resilient Aboriginal-owned social and cultural assets

The severe weather and floods in February and June 2022 caused significant damage to Aboriginal-owned social and cultural assets in communities across New South Wales. These assets contribute to a community's sense of belonging and identity. To support affected communities, the Australian and New South Wales Governments are funding projects that will restore and build flood resilient Aboriginal-owned assets.



Research and academia

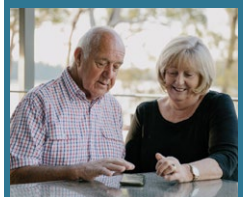


Following the priorities set in Australia's Disability Strategy

Dealing with disasters can be a difficult time for all those affected. The additional complexities for the 1 in 6 Australians living with disability can be profound. NEMA has engaged the University of Sydney Centre for Disability Research and Policy to develop National DIDRR Guiding Principles and Standards for disability inclusive disaster arrangements and a toolkit to operationalise planning and practices.



Communities and people



Protecting Australian homes with a bushfire resilience rating app

The impact of bushfires can be devastating for families and individuals, particularly when it comes to damage or loss of their homes. The free Bushfire Resilience Rating Home Self-Assessment app, funded by the Australian Government, helps households assess their site-specific risk and take action to improve their resilience to bushfire.



The contraction of pencil pine populations in northern Tasmania

Sarah Cooley,¹ Prof. Michael-Shawn Fletcher,¹ Prof. Russell Drysdale,¹ Dr. John Hellstrom,¹ Dr. Quan Hua,² and Patricia Gadd,²

¹ School of Geography, Earth and Atmospheric Science, University of Melbourne, Australia

² Australian Nuclear Science and Technology Organisation, Lucas Heights, NSW, Australia

Response, resilience, and recovery of Tasmania's endangered Pencil Pine using a multi-archive palaeoenvironmental record

The fate of *Athrotaxis cupressoides* (pencil pine) in Tasmania remains uncertain under future climate change and fire weather projections. Using palaeoecology, palaeoclimatology and species distribution modelling, we identify a northward contraction of pencil pine populations in response to shifts in climate over millennia. This research aims to inform management in locations presenting the greatest longevity of climatic suitability in the face of increasing climate change and wildfire events.

Research context:

Recent climate-driven fire activity in Tasmania threatens the persistence of long-lived hyper fire sensitive tree species, including palaeoendemic conifer *Athrotaxis cupressoides* (pencil pine). Future-proofing these systems is challenging, particularly when attempting to apply contemporary ecosystem management strategies to such long-lived plant species (e.g., >1000 years), which operate and respond over timescales much longer than neo-ecological observations can detect.^{1,2} Thus, to appropriately manage these ecosystems, it is critical to understand the response of such species to perturbations (e.g., fire and climate) at appropriate timescales. Doing so more accurately reflects their natural resilience and response, in turn, identifying which areas should be prioritised for current management intervention in the face of increasing wildfire and ongoing climate change.³

Approach:

Palaeoecology (lake sediments):

- Fossil pollen, charcoal analysis, radiocarbon (¹⁴C) dating, geochemistry

Palaeoclimatology (speleothem):

- Stable isotopes, trace elements, Uranium-Thorium (U-Th) dating

Species Distribution Modelling:

- MaxEnt - coding (*Rstudio*), spatial analysis (*ArcGIS*)

Key findings:

- Palaeoecology reveals a strong long-term relationship between high-moisture and high resilience, reproduction and post-fire regeneration in pencil pine.
- Athrotaxis* distribution has contracted to the northwest of Tasmania throughout recent millennia.⁴⁻⁶
- Only 6% of current populations will exist within climatically suitable habitat by 2030 (Fig. 1), with only 15% of total current populations existing by 2050, in areas of low climate-based resilience.
- A loss of 93% of total habitat is predicted by 2050, with remaining habitat existing in disequilibrium with climate (low climate-based resilience) contracted toward to northwest.

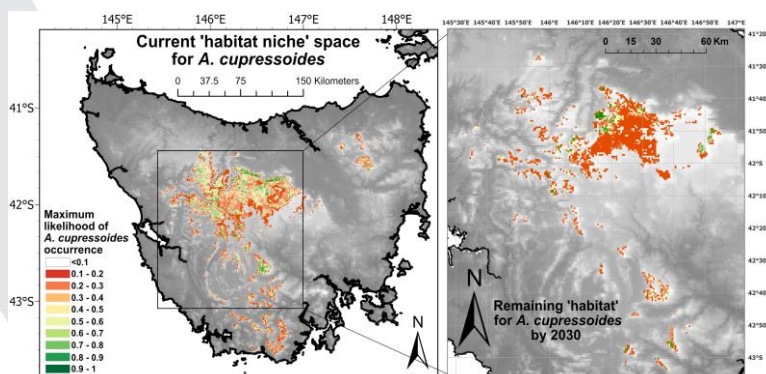


Figure 1: Maps showing current habitat distribution of *Athrotaxis cupressoides* in Tasmania relative to climate-based habitat suitability (left); predicted habitat remaining by 2030 under the SSP370 future climate scenario, with limited high-resilience habitat (>0.5 likelihood of occurrence) contracted toward the northwest of the island.

Further information

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References: 1. Birks, H.J.B. (2012). Analysis of stratigraphical data: Tracking Environmental Change Using Lake Sediments, pp. 355-378. 2. Willis, K.J. & Birks, H.J.B. (2006). What is natural? The need for a long-term perspective in biodiversity conservation. *Science*, 314(5803), pp. 1261-1265. 3. Liu, H. et al. (2023). IPCC Climate Change 2022: Synthesis Report, Summary for Policymakers. IPCC, Geneva. 4. Mariani, M. et al. (2019). Climate change reduces resilience to fire in subalpine rainforests. *Global Change Biol.*, 25(6), pp. 2030-2042. 5. Fletcher, M.S. et al. (2014). The legacy of mid-Holocene fire on a Tasmanian montane landscape. *J. Biogeogr.*, 41(3), pp. 476-488. 6. Fletcher, M.S. et al. (2018). The changing role of fire in conifer-dominated temperate rainforest through the last 14,000 years. *Quat. Sci. Rev.*, 182, pp. 37-47.

NAVIGATING EMERGING FIRE/HAZMAT HAZARDS

WIN THE RACE AGAINST TIME WITH EARLY DETECTION

- ✓ Hazards are becoming more complex and unpredictable.
- ✓ New risks—like attacks at public events, lithium-ion battery fires, improperly disposed of radiological materials—on the rise.
- ✓ Traditional gas detection methods aren't enough with new hazards, like radiation, invisible and undetectable by human senses.



147

radioactive misuse incidents
reported in 2024.

Source: IAEA Incident and Traffic Database, 2024

RADIATION 101



Ionizing radiation includes alpha, beta, neutron, and gamma types.

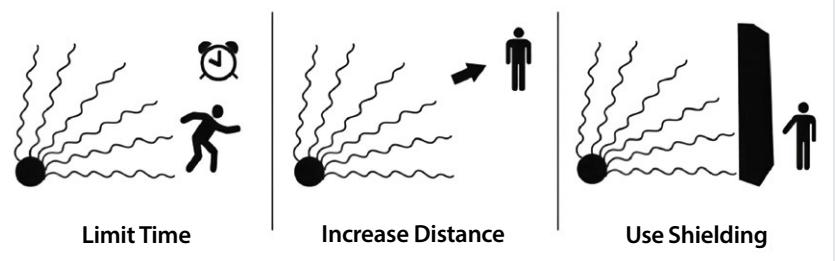


Gamma radiation is most dangerous due to its high energy and deep penetration.



Radioactive materials are used widely in industries ranging from healthcare to energy—if not properly secured, they could be misused by malicious actors.

TO REDUCE RADIATION EXPOSURE



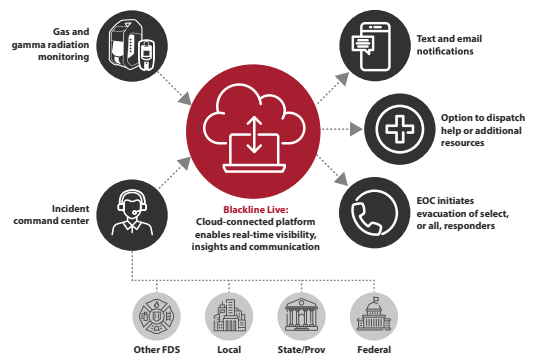
Blackline's direct-to-cloud EXO 8 portable area monitor detects up to eight gases and optionally gamma radiation, with enhanced sensitivity and up to triple the detection range of similar devices.



red dot winner 2025

THREE CAPABILITIES CRITICAL TO EFFECTIVE RESPONSE

- ✓ Area monitoring device that can offer simultaneous gas and radiation detection
 - Provides early notification of invisible hazards
 - Detects hazards from a distance to reduce responder and community exposure
 - Translates to fast deployment time due to all-in-one device
- ✓ Real-time alerting for faster more informed decisions
 - Instant notifications for high and low gas and gamma events
 - Events geo-stamped with exact GPS location of hazards
- ✓ Cloud-connected platform for actionable intelligence
 - Enables remote monitoring
 - Facilitates data sharing amongst stakeholders
 - Automates analytics



Blackline Safety is redefining emergency response.

Discover how real-time connected tech and research-backed innovation can protect your teams and communities.



Scan to learn more or download the radiation white paper

blacklinesafety.com/EXO8

Testing Bushfire Evacuation Assumptions in East Gippsland using SAFER and SEEKER

East Gippsland Municipal Emergency Management Planning Committee worked with CSIRO to test bushfire evacuation assumptions. SAFER aggregated risk to localities over thousands of fires. SEEKER simulated traffic for a high-impact fire against emergency response assumptions and accounting for community behaviour.

Dhirendra Singh (CSIRO), Mitchell Stephen (Department of Energy, Environment and Climate Action), Austen Hawkins (East Gippsland Shire Council), Dang Quan Nguyen (CSIRO), Simon Knapp (CSIRO)

Project Summary

Motivation: The use of community evacuations in East Gippsland Shire during the 2019 Black Summer fires motivated the need for testing evacuation assumptions and community safety measures to improve planning for future events. The **SEEKING SAFER evacuations and invocations in East Gippsland** project funded by Emergency Management Victoria under the Risk and Resilience Grants Program was a collaboration between the East Gippsland Municipal Emergency Management Planning Committee and CSIRO to utilise evacuation modelling to improve knowledge and target mitigation and response decisions.

Technology: CSIRO's evacuation modelling technology is supporting governments in evacuation planning and community resilience efforts. **SAFER** analyses the maximum achievable flow of vehicles on roads out of danger under several bushfire scenarios. It identifies hotspot areas of elevated risk in evacuations across all scenarios. **SEEKER** takes one bushfire scenario and simulates individual-level community response to the threat, emergency messaging, and traffic management, using self-evacuation behaviours.

Method: A Project Working Group (PWG) developed assumptions about traffic conditions on roads, whereabouts, and behaviours of people, accounting for visitors to the Shire during the New Year holiday period. SAFER was run under these assumptions against thousands of simulated bushfires. SAFER evacuation metrics were aggregated to determine suburbs and localities with elevated evacuation risk. Identified hotspots guided detailed evacuation modelling for a specific bushfire in SEEKER. This case study demonstrated the value of the combined SAFER/SEEKER approach for data-driven assessment of evacuation risk and improving evacuation planning in identified high-risk areas.

Results: The PWG noted the value of SAFER for quantifying evacuation risk in East Gippsland for informing risk reduction measures. Feedback noted that SEEKER analysis of traffic flow consequences, including unintended effects of traffic management point activation, offers meaningful operational insight for planning and resourcing. The capability can support Incident Controllers, in anticipating consequence pathways and prioritising strategic objectives, Planning Officers, in identifying critical routes, pressure points, and time-sensitive evacuation windows; and Public Information Officers, in delivering timely, targeted messaging that aligns with likely behavioural and traffic patterns.

SAFER Assessment of Evacuation Risk across 6,000+ fires

Phoenix runs (6,219) for historically worst weather conditions were used from the 2km Statewide ignition grid in DEECA's enhanced bushfire risk modelling framework (Risk 2.0) covering the Shire. SAFER was run for all combinations of fire and affected population node. Results were aggregated to Suburbs and Localities. The following output metrics were produced in standard formats for use within GIS software like QGIS.

- Ignition risk by populations:** Ranking of ignition points of input fires by the total population affected by each fire (area burnt)
- Ignition risk by roads:** Ranking of ignition points of input fires as the sum of the vehicle flow capacities of impacted road segments considered critical for evacuations
- Impact risk to populations:** Ranking of population nodes as a product of the number of fires that impact a node, and the population count at the node
- Impact risk to roads:** Ranking of road segments considered critical in evacuations as a product of the number of fires that impact a segment and the vehicle flow capacity of the segment
- Evacuation risk by populations:** Ranking of population nodes by the longest evacuation time for a node across all fires that impacted it

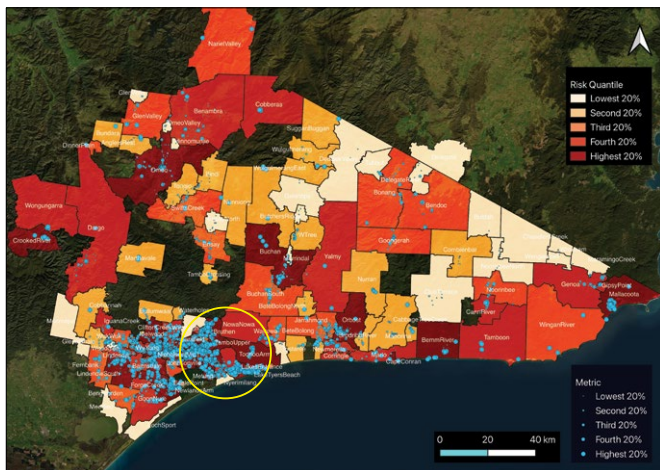


Figure 1: SAFER evacuation risk by populations. Blue circles show population nodes evacuated across all fires. Larger circles show longer evacuation times. Results are summed to Suburbs and Localities (SALs) coloured by quantiles, with darker colours representing higher risk. The area highlighted by the yellow circle was chosen for detailed modelling in SEEKER.

SEEKER Detailed Modelling for a Single High-Impact Bushfire

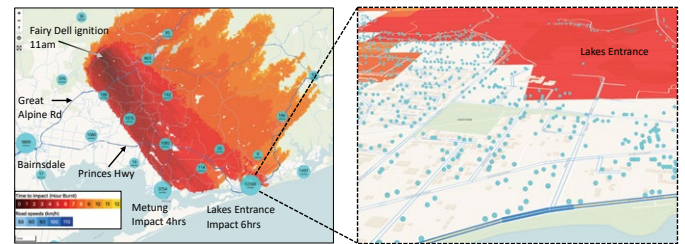


Figure 2: The Fairy Dell ignition (left image) impacting high-risk communities used in the SEEKER scenario. The fire quickly cuts Great Alpine Rd and Princes Hwy and access to Bairnsdale in the west. The affected population (blue clusters) is derived from census 2021, with an additional estimated seasonal influx typical of the New Year's holiday period. Vehicles are shown clustered for clarity but are placed separately at valid street locations as shown for Lakes Entrance (right image).

Testing emergency response and evacuation assumptions

The PWG discussed the Fairy Dell bushfire in detail and made the following assumptions relating to evacuation. These assumptions were then entered in SEEKER to simulate evacuation traffic and understand possible consequences for the affected population.

Messaging: Reflects expected Incident Management Team decisions given 11:00 am ignition. 11:30 am, Watch & Act to all threatened Suburbs and Localities (SALs). 11:45 am, Emergency Warning - Evacuate immediately to SALs within 4 hrs from impact, Watch & Act / Prepare to Leave to SALs 4-8 hrs from impact, and Advice to SALs more than 8 hrs from impact. Assumed 75% of people messaged will receive the alert or hear from social connections.

Roads and Traffic: Roads data from OpenStreetMap corrected to expected speeds and flows with PWG. 40% capacity on roads taken by background traffic not explicitly modelled. 30% reduction in driving speeds due to poor visibility from smoke, and vehicles with trailers including horse floats.

Road Closures: 12 pm on Great Alpine Rd westbound at Swan Reach Rd (moved east to Main Rd Bruthen at 3pm) and eastbound at School Rd Sarsfield. 1pm on Princes Hwy eastbound at Nicholson River bridge in Nicholson, westbound at Tambo River bridge in Swan Reach, and Tambo Upper Rd northbound in Swan Reach. 2pm Princes Hwy westbound at Hunters Ln in Lakes Entrance and Nowa Nowa Rd in Nowa Nowa.

Evacuation Destinations: Bairnsdale City Oval Emergency Relief Centre, Lakes Entrance, and Orbost are destinations for residents, Melbourne (west of Bairnsdale) for visitors. Emergency Assembly Areas (EAAs) given by Local Incident Management Plans, and Neighbourhood Safer Places (NSPs) are places of last resort.

Behaviours: People become aware from proximity to fire (5km) and embers (10km), and from emergency messages. They act if anxiety reaches their threshold to act. 20% will stay regardless. 60% visit an intermediate location nearby if triggered to act, possibly returning home (60% chance), before considering evacuation. People prefer destinations closest to them. 60% of the affected population will be mobile. Most depart in 30 mins of the decision to leave but can take up to 2 hrs (log normal curve). If stuck in congestion or on inaccessible roads (due to fire or forced closures) people attempt alternative routes up to twice. When stuck in congestion, likelihood of re-planning is 20%. If people are unable to reach their preferred destination after re-routing attempts, they try their fallback EAA / NSP, else home, else give up and stop.

Insights: About 21,000 people attempted evacuation and of these 54% were visitors. Only 25% reached their preferred destination given traffic closures. Many vehicles were stranded (due to finite self-evacuation destination options in the model), reinforcing the need for messaging to include clear options for safe destinations. The model provided operational insight into effects of emergency response (e.g., Figure 3).

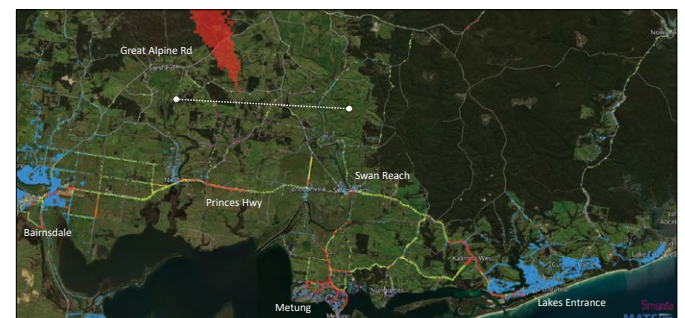


Figure 3: Still image from SEEKER simulation showing the evacuation at 1:25 pm. People at home are blue dots. Vehicles travelling at the highest speed are green, those slowing down to half speed are yellow, with those in congestion are red. Pink scattered dots are people aware of the fire who are yet to act. All emergency messages have been issued. Road closures are activated at extremes of dotted line sections of the Great Alpine Rd at 12:00 pm and Princes Hwy at 1:00 pm. Congestion for westerly traffic on Princes Hwy (red section) has increased despite the closures, from significant inflow from the north.

FOR FURTHER INFORMATION
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REFERENCE
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ACKNOWLEDGEMENTS
This work was made possible through the valuable contributions of the Project Working Group from East Gippsland Shire Council (EGSC), Department of Energy, Environment and Climate Action (DEECA), Victoria Police (VICPOL), Department of Transport and Planning (DTP), and Victoria State Emergency Service (VICSES) including Andrew Bills VICPOL, Austen Hawkins EGSC, Carole Macmillan EGSC, Dylan Grayham EGSC, Jack Haslam EGSC, John Crane DTP, Kath Smith EGSC, Matthew Jenkins VICPOL, Michael May DEECA, Mitchell Stephen DEECA, Rachael Nicolson VICSES, Shane Turner EGSC, Tim Davidson EGSC, and Wayne Rothwell VICPOL.



Enhancing Bushfire Evacuation Preparedness Through Scenario-Based Insights: A Case Study from Victoria



Dr Nick McCarthy¹, Dr Dhirendra Singh^{2*}, Ian Anderson¹, Stephen Walls AFSM¹

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*Presenting Author

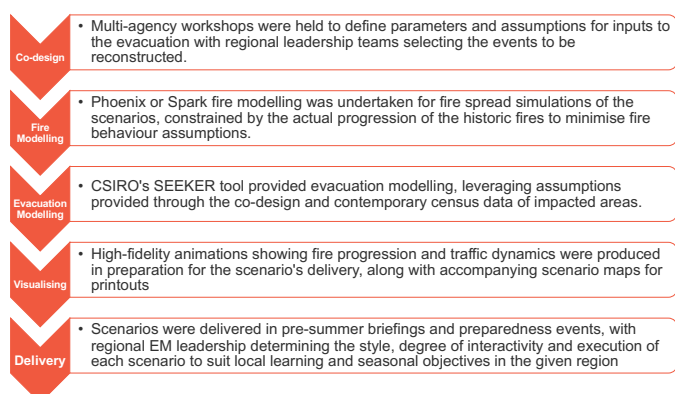
The Challenge

Bushfire evacuation is a fundamentally non-linear process and can carry high risk to life. In catastrophic fire conditions, vehicles evacuations, low visibility and fire behaviour can converge to create extreme risk. Not all emergency managers outside of the fire agencies have experience with this risk.

Project Objectives

- Reconstruct historic bushfire events with modern population and infrastructure data
- Develop visual tools to communicate evacuation complexities to emergency management personnel
- Foster a shared understanding across government agencies involved in bushfire response
- Test the utility of scenario-based tools for decision-making and risk communication

Methodology



Direct Reach

Scenarios presented to **over 700 EM sector participants** across CFA, DEECA, Victoria Police, Departments of Education, Health, Transport and local governments, with multiple follow-up facilitations requested.



Outcomes:

- Improved accessibility and enhanced inter-agency **understanding of bushfire evacuation risk insights for non-fire expert audiences**
- Demonstrated **appetite for integrated, simulation-based planning tools**, but highlights need for understanding who are the operators of these advanced cross discipline integrated tools
- Provided **stimulus for wider adoption of advanced modelling tools** while avoiding positioning technological solutions (i.e. models) as 'resolving' all challenges

The Scenarios

Each EM region selected their own historic fire scenario, which included:

- The 1962 Dandenongs Fire (Eastern Metro Region)
- The 1983 Cockatoo Fire (Southern Metro Region)
- The 1985 Avoca Fire (Loddon Mallee Region)
- The 1962 Hurstbridge Fire (North West Metro Region)
- The 1978 Paynesville Fire (Gippsland Region)
- The 1952 Barnawartha Fire (Hume Region)
- The 1969 Lara Fire (Barwon South West Region)
- The 1977 Western District Fires (Grampians Region)

As an example, a frame of the 1977 Western District fires example is provided below. It simulated the eleven fires across different response boundaries that occurred simultaneously with contemporary assumptions.



Stakeholder Feedback:

- In the post event survey for the 1977 Western District Grassfires scenario, there was a net promoter score of +50% ("would you recommend to a colleague?")
- **Fire Agency Personnel:** "Helped visualise uncertainty and communicate trade-offs decision-makers may need to make under pressure"
- **Non-Fire Agency Emergency Managers:** "Very beneficial to get us all to start thinking about the impacts of so many fires in the region." (in the context of the 1977 Western District grassfires).
- **Local Government Partners:** "Historical info can seem abstract. This can put a sense of applying the risk to familiar locations"

Training and Video Resources Available!

The project produced a video to utilise existing and established research to explain bushfire evacuation dynamics to broad emergency management audiences

Please get in touch to use it!

bushfire.research@cfa.vic.gov.au

Lessons Learned and Recommendations:

- **Scenario tools need tailored facilitation** - Structured facilitation was required to maintain focus on evacuation when stepping through "work as imagined versus work as done"
- **Emotional impacts must be managed** - Visual tools are powerful but can provoke distress without proper context and support
- **Frame simulation tools as exploratory aids** rather than predictive or authoritative and accompany use with **transparent explanation of assumptions**

Acknowledgements

This project was funded under the National Partnership Agreement State and Regional Priority Projects (Round 3). The authors acknowledge the collaborative contributions of DEECA, CFA, Victoria Police, CSIRO, EMV, and regional emergency management partners. It was supported by the Victorian Safer Together program.

SAFER Western Australia

Operationalising Bushfire Evacuation Modelling

Evacuation Problem

What is the maximum flow at which a community node within a fire's perimeter can be evacuated to safe nodes outside the perimeter, and where are the bottlenecks on the corresponding evacuation routes?

Background

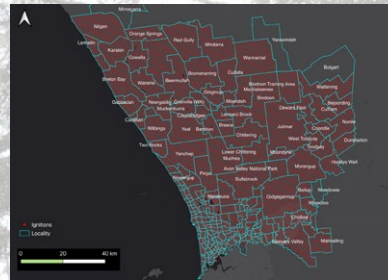
Evacuation modelling tools have been developed by the CSIRO and RMIT since 2015. The tools were initially designed for bushfire emergency evacuation planning; have expanded to include other hazards, including floods and cyclones.

Making evidence-based decisions is essential to support emergency managers, in planning, preparedness, response and recovery. The State-wide Analysis of Fire Evacuation Risk (SAFER) tool measures the combined risk across many bushfire evacuation scenarios for areas as large as whole jurisdictions. Evaluability risk metrics from a given set of input data comprising road network, a population dataset, and the geographical extents of bushfire scenarios. The model outputs include Geographic Information Systems (GIS) layers for evacuation risk aggregated to localities and region, as well as a technical blueprint for technology providers to design and develop more effective and user-friendly platforms that are tailored to the specific needs of emergency managers.

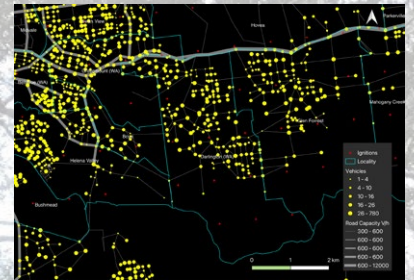
The outcomes from this project align with the findings of the 2020 Royal Commission into National Natural Disaster Arrangements, which summarises the evacuation planning concern as: "Planning for evacuations is an important part of keeping communities safe from the harm caused by natural disasters. Planning for evacuations should occur early and involve local governments and communities. Evacuation planning should factor in key issues such as seasonal populations, evacuation routes, sheltering facilities, jurisdictional boundaries, messaging to communities and risks to safe evacuation."

Workflow and Analysis

The Australis bushfire simulation engine was used to create worst case scenarios, with underlying data: 6 km resolution - Bureau of Meteorology Atmospheric high-resolution Regional Reanalysis for Australia (BARRA-R) worst case conditions, ignition points every 1km by 1km, 8 wind cardinal points, 100m grid cells and for period of 6 hours.



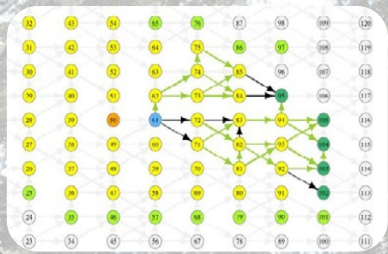
1km by 1km Ignition inputs



Ignition points with number of vehicles and road capacity (vehicles/hour)

Maximum flow algorithm was then applied to 67,032 Aurora fire scenarios within south-west Western Australia, together with road network derived from OpenStreet Map layer and population data with resolution 1km by 1km.

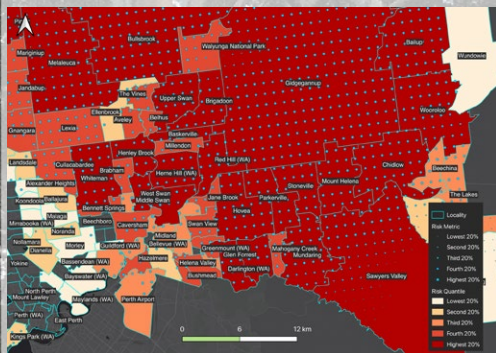
For every fire and population nodes within, the SAFER tool computes the evacuation flow and road network bottlenecks. Algorithm then aggregates these intermediate results to calculate values for the risk metrics. Risk metrics are grouped into three classes: Ignition risk (by populations and roads), Impact risk (to populations and roads) and Evacuation risk (by populations).



The maximum-flow calculations on a realistic road network. The orange node (50) is the ignition point, while the fire extent is represented by the yellow nodes. The light-green nodes represent possible exit-nodes (just the dark-green nodes are the selected destination nodes (located in beeline distance away from the fire). The blue node (61) is the population node; the flow of vehicles will be calculated from this node to any of the dark-green safe nodes (nodes 95, 102-105 on the diagram). The arrows represent all possible routes between adjacent nodes, with the dark arrows indicating the weakest links.

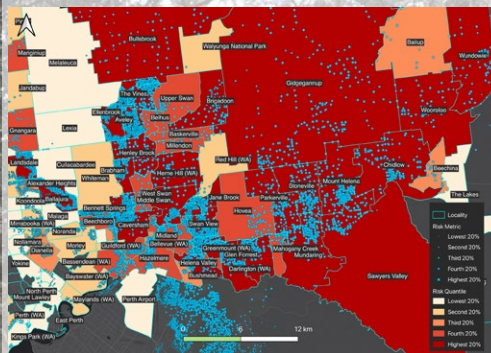
Ignition risk by populations

Ranking of ignition points of input fires by the total population affected by each fire (area burnt)



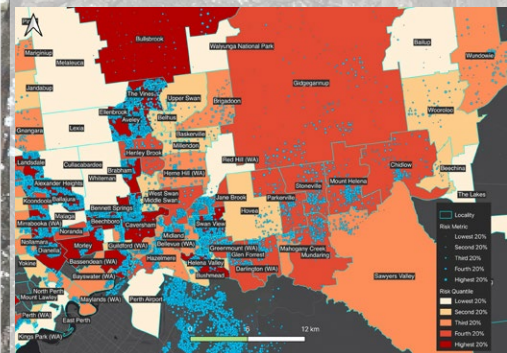
Impact risk to populations

Ranking of population nodes as a product of the number of fires that impact a node and the population count at the node



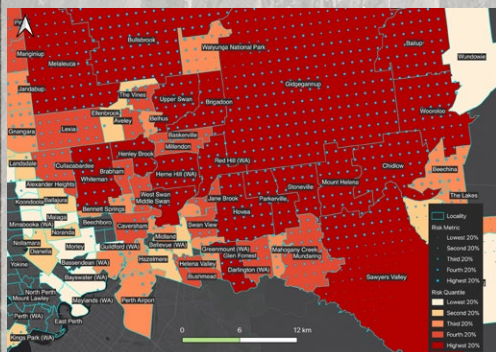
Evacuation risk by populations

Ranking of population nodes by the longest evacuation time for a node from all fires that impacted it



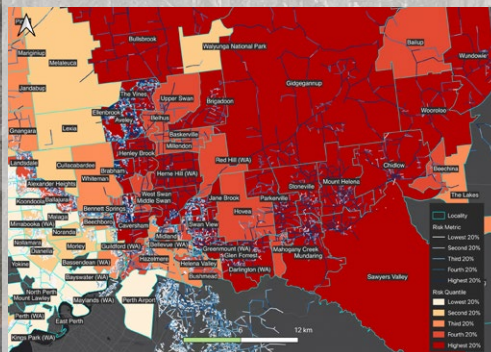
Ignition risk by roads

Ranking of ignition points of input fires as the sum of the vehicle flow capacities of impacted road segments considered critical for evacuations



Impact risk to roads

Ranking of road segments considered critical in evacuations as a product of the number of fires that impact a segment and the vehicle flow capacity



Model assumptions:

- Only one fire is active in the landscape at any time,
- There is no background traffic,
- Each evacuee enters the road network via the highest-capacity road near his or her starting-location,
- All road network nodes outside the fire's perimeter are safe,
- The population consists of full-time residents located at their residential addresses (as per the 2016 census),
- The road-links do not become blocked during the evacuation by crashes or for any other reason, and vehicles do not seek alternative routes by which to evacuate.

Landscape metrics for a renewed standard of cover



The Standard of Cover (SoC) is a strategic document that establishes the amount and type of bushfire suppression resources required to suppress bushfires on public land in the state of Victoria.



SoC observations from experienced bushfire management practitioners described the process to determine resource allocation for response centres (*work centres*) was difficult to understand, rigid to work with and challenging to explain to others.

A new approach to the SoC was needed...

The SoC is updated every 5 years to ensure the strategy is refreshed and evolves with modern thinking and technology.

Previous SoC versions used a variety of means to establish a resource strategy, including:

- Reasonable concurrent resource demands (*significant level 1, 2 and 3 fires*)
- Risk Based approach (Property Loss)



Total Score	2000 MoFC Class	Risk Rating Class	MoFC WORK CENTER	Count	Score	Category	Count	Score	Category	Leave 2 / 3	Score Lv 2 / 3	Category
Score				Threat	Threat	Threat	Ignition	Public Land Ignition	Public Land Ignition	Incidents	3 Incidents	Incidents
94	A	A	Erica	96477	4	VH	160	3	H	26	4	VH
92	A	A	Bairnsdale	102206	4	VH	157	3	H	33	4	VH
90	A	A	Swifts Creek	126915	4	VH	145	3	H	8	3	H
88	A	A	Cann River	46980	3	H	215	4	VH	53	4	VH
88	A	A	Noojee	159777	4	VH	103	2	M	12	4	VH
88	C	A	Dargo	116822	4	VH	111	2	M	17	4	VH
82	A	A	Nowa Nowa	52733	3	H	167	3	H	23	4	VH

Above example of previous SoC risk based outcome scoring for work centre classifications

The SoC working group determined that response centre classifications was a practical approach, but the data used to establish the classifications needed to be reviewed.

Measurable against response areas



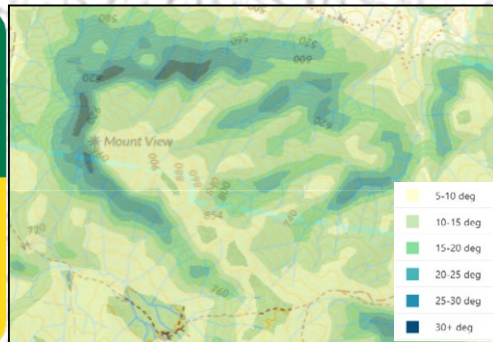
New metrics established are

Relevant to fire behaviour

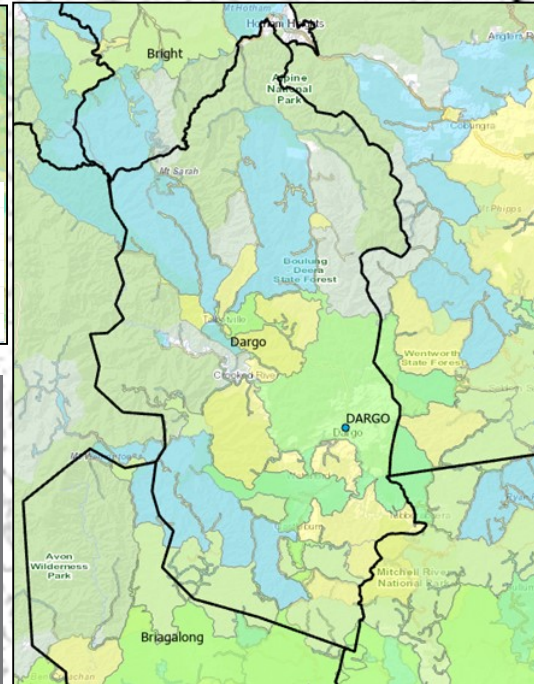


Tangible for fire practitioners

Reflective of resource limitations



Above example of slope class in Ovens response area



Above example DARGO response area and the modelled drive time from response centre for a commercial vehicle

Metric	Rational
Public Land in response area (ha)	Establishes the extent of bushfire suppression responsibility.
Forest Type (ha p/type)	Fires behave differently in different forest types and different tactics and resources are used. Forest types grouped into 9 category's and given a weighting.
Slope >15° (ha)	Areas of slope >15 can be more difficult to suppress fires on and often require more aircraft and more foot based fire fighters rather than heavy plant.
Travel Time (ha p/time threshold)	Time taken to travel from a response centre to a fire location can create have an impact on resources required for fire suppression. The longer it takes for fire suppression resources to reach the fire, the more time the fire has to grow in size and develop before ground-based suppression can commence.
Priv Assets <150m from Priv / Public boundary (number)	This metric is used to show response areas with high private asset distribution close to public land. Fast and adequately resourced bushfire response is essential to ensure the best chance of first attack success and reduce the chance of private assets being impacted by bushfire in the first 12 hours.
Mutual Aid (number)	Mutual aid is measured by modelling the number of neighbouring work centres able to respond to >25% of a response area in less than 60 minutes. Areas where help is far away may require more resourcing to account for this.
Fire History (number)	Response areas with high average number of responses per year require continual resource allocation to ensure adequate response can continue

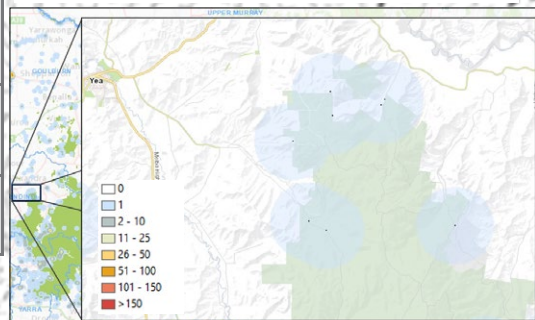
It is acknowledged that there are many factors that influence fire behaviour and first attack success, which informs into Workcentre resourcing levels.



There are also many tactical elements that have evolved at district and regional levels that a **pure data model** would not capture.

This type of arrangement is important to capture and takes the form of a '**regional narrative**'.

This provides additional context to Workcentre classifications, also for use to contextualise season variations and recent fire history.



Above Priv. assets <150m from Priv / Public boundary

The **balance** between **Landscape Metrics** and **Regional Narrative** will provide a more nuanced, accessible, adaptable and scalable Standard of Cover for bushfire response.



THE EXPANDING PROBLEM SPACE OF EMERGENCY MANAGEMENT AND THE LIMITS OF TRADITIONAL RISK ASSESSMENT

Dr. Neville Ellis – Department of Fire and Emergency Services (Western Australia)
John Richardson – Australian Institute of Disaster Resilience

Increasing complexity of the disaster landscape

The last decade has seen a significant increase in the cost and complexity of disaster events, both nationally and abroad. This is being driven by climate change, demographic shifts, increasing dependence upon interconnected critical infrastructures and services, as well as tightening global to local connections in transport, economic, cultural, and other networks (**Figure a**). In response, systemic risk has become a priority across emergency management policy, strategy, and research. In contrast to conventional risks, which are easily defined, often place-based, and amenable to traditional risk management approaches, systemic risks are highly complex, include compounding and cascading characteristics, and have the potential to destabilise the overall resilience of human and natural systems. Fundamentally, systemic risks challenge traditional approaches to risk assessment and management. While the high-level principles of systemic risk have been articulated (see AIDR 2021), further work is needed to develop practical assessment methods and management strategies.

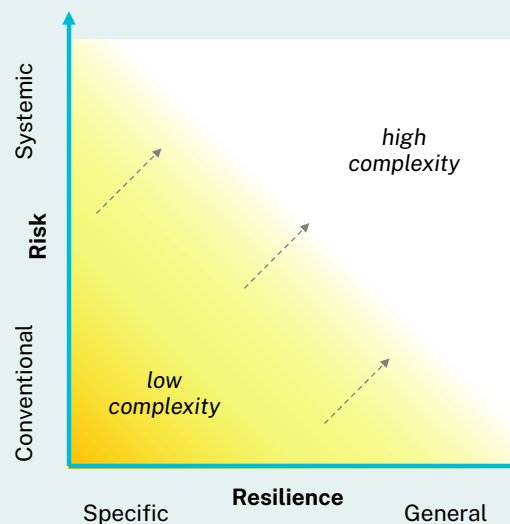
The expanding problem space and risk assessment

Figure b provides a heuristic for visualising the impact of systemic risk on the problem space of emergency management. The problem space defines the conceptual boundaries of emergency management and is framed by two axes – *risk* (the external environment) and *resilience* (the internal environment of emergency management). Emergency management seeks to reduce risk by building resilience. Most of the focus, both historically and today, is on enhancing capabilities to manage conventional risks. This is specific resilience. Emergency management investigates this part of the problem space with traditional risk assessment methods, usually based on ISO 31000 (e.g. National Emergency Risk Assessment Guidelines). These are a reductive class of methods that work well when the likelihood and consequences of defined risks can be reasonably estimated (Adger et al 2018). However, these methods do not scale up well when applied in the high-complexity environments of systemic risks. Assessment of systemic risks requires a different approach.

(a) Drivers of Complexity

- Compound, cascade and concurrent events
- Interdependency of critical infrastructures
- Global to local connectedness
- Multi-dimensional vulnerabilities
- Increasing exposures

(b) Problem Space



(c) Risk Assessment

Systems Epistemology

Understands systems as interconnected wholes

- Scenario analysis
- Complex adaptive systems – narrative approaches
- Network analysis
- Forensic Investigation of Disasters (FORIN)
- Accelerator for Systemic Risk Assessment (ASRA)

Reductive Epistemology

Breaks down complex systems into simpler parts

- ISO 31000 Risk Management Guidelines
- NERAG
- National Natural Disaster Risk Profile
- Threat and Hazard Identification Risk Assessment (THIRA)

A pathway forward

Figure c outlines established and emerging methodological options for systemsbased approaches to risk assessment. These are largely premised on systems theory. While outlined in the literature, further work is needed to make these usable for emergency management, particularly when applied at a sectoral level. Given that systemic risks are deeply uncertain, we propose a qualitative, capability-first, and systems-inspired approach, drawing on the Australian Disaster Preparedness Framework (ADPF) and National Climate Risk Assessment (NCRA first pass) methodology (**Figure d**). The ADPF describes the capability elements (inputs) needed for emergency management, while the NCRA outlines the approach.

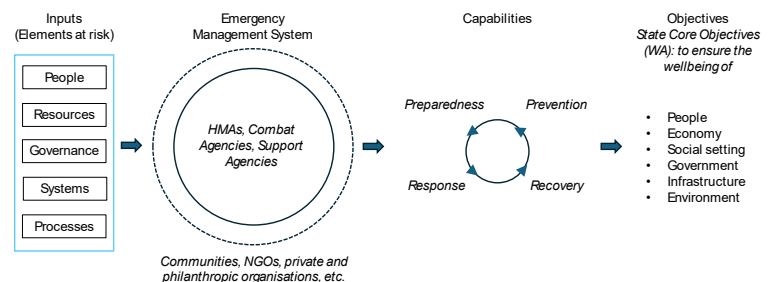
Step 1: Identify key elements at risk – these are the essential inputs that underpin emergency management capability

Step 2: Identify current vulnerabilities to the key elements

Step 3: Identify key elements at risk under future climate-socioeconomic scenarios (i.e. scenario testing)

Step 4: Identify key controls or adaptations to address key elements at risk

(d) Conceptual Model



Socio-economic and climate scenarios (stress testing)

- scenarios of future climatic, economic, social, and political conditions developed to stress-test sector-level elements at risk
- controls or adaptations should:
 - be hazard-agnostic and address key vulnerabilities or exposures to the elements at risk
 - enable the sector to navigate complexity and uncertainty
 - Focus on improved governance, coordination, anticipation, and learning

THE ASSURANCE ADVANTAGE...

Unlocking Deeper Insights for Bushfire Risk Management in Western Australia

OBRM Assurance Program, Office of Bushfire Risk Management, Department of Fire and Emergency Services (DFES)

OBRM was established by the State Government to promote best practice bushfire risk management in WA. The Assurance Program supports organisations to manage the associated risks that come with fuel management activities. The Assurance Program also works to confirm that organisations' approaches to fuel management, particularly planned burning, have the desired effect on bushfire risk.

The Assurance Program Team:

- Provides objective, independent, oversight of the risk controls the organisation has in place, including:
 - Written policies and procedures
 - Decision support systems
 - Organisational culture, training and development programs and resourcing arrangements.
- Compares the reviewed organisations' approach to:
 - Risk management using the Australian Standard for Risk Management (ISO 31000:2018)
 - Best practice as described by the Guidelines and Framework of the Australian Fire Agency Council's National Burning Project.

TIMELINE - ASSURANCE PROGRAM PARTICIPANTS

2012



Department of Biodiversity,
Conservation and Attractions

OBRM ENDORSED



**PARKS AND
WILDLIFE
SERVICE**



**KIMBERLEY
LAND COUNCIL**

OBRM ENDORSED



2017



2018

OBRM ENDORSED



DFES
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WORKING TOWARDS OBRM ENDORSEMENT

2020



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2024

2022



WORKING TOWARDS OBRM ENDORSEMENT



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WORKING TOWARDS OBRM ENDORSEMENT



DFES
Department of Fire &
Emergency Services

FOR A SAFER STATE

FROM GUIDELINES TO THE GROUND:

Supporting Local Government Bushfire Risk Management in Western Australia

Vivienne Schweizer¹, Debbie Screen², Jayd King¹ and Glen Daniel¹

¹Office of Bushfire Risk Management, Department of Fire and Emergency Services. ²City of Swan.



The Bushfire Risk Management (BRM) program is a collaborative, statewide initiative aimed at reducing bushfire threats across communities by:



Supporting local governments in identifying and managing bushfire risks.



Facilitating collaboration between government, industry, landholders, and the community.



Emphasising bushfire risk management is a shared responsibility.



Acknowledging that effective risk reduction requires landscape-wide coordination.

KEY FEATURES OF A BUSHFIRE RISK MANAGEMENT PLAN

Context Statement

A description of the political, economic, social and natural environments that will influence bushfire risk and treatments. It explores community drivers for managing bushfire risk and helps to identify and plan suitable treatment strategies.

Bushfire Risk Controls

Describes the programs and activities undertaken by the local government and other stakeholders that contribute to managing bushfire risk throughout the local government area.

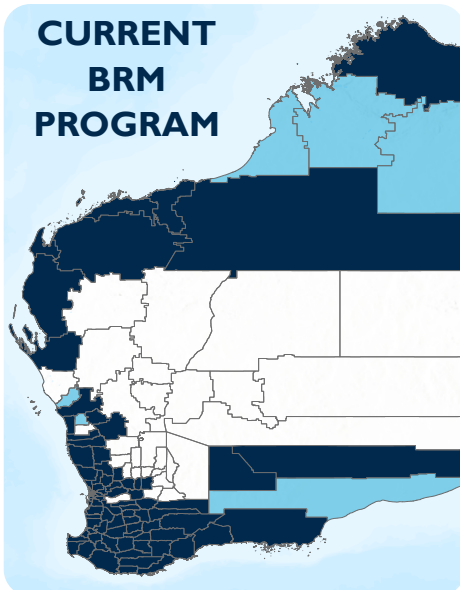
Cascading Risk

An optional component that assesses risks to the systems and networks that support the community. The aim is to identify how disruption to these could cause extended impacts following a bushfire and how such outcomes can be minimised.

Treatment Strategy

Provides high-level guidance on the approach that will be taken to treating bushfire risk in the local government area. This is informed by the context and community values and informs the development of the Treatment schedule.

CURRENT BRM PROGRAM



7

Local Governments are currently developing a BRM Plan

89

Local Governments have a DFES endorsed BRM Plan

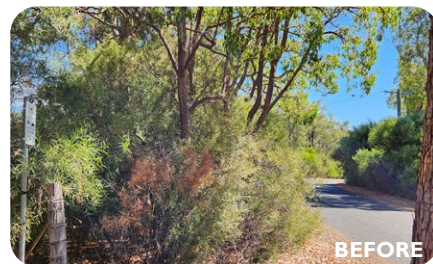


BUSHFIRE RISK MANAGEMENT PLANNING IN ACTION

Susannah Way, Gidgegannup

CONTEXT:

Susannah Way is a curved, narrow, dead end road over 700m long servicing 12 semi-rural properties. The verge varies between 7-10m in depth and both sides consisted of isolated endemic vegetation (mainly Jarrah/Marri trees) and large infestation (thickets) of mainly *Acacia iteaphylla* (Flinders Range Wattle) and a few other woody weeds. This classifies the areas as 'forest' vegetation/fuel. These woody weeds are extremely flammable and burn with high intensity.



BEFORE

Some homes are located close to the verge exposing them to the threat of adjacent flammable vegetation. The volatility of these thickets on both sides of a long cul-de-sac posed an entrapment risk to escaping residents and/or firefighter safety and appliance access on the road should a fire occur.

TREATMENT:

A treatment was developed to remove the woody weeds between the road shoulder and property fencelines. This was done to change the fuel arrangement and vegetation classification from forest to woodland by introducing separation between the ground fuels and the canopy. This also widened the vehicle traversable surface and view. All endemic vegetation was retained.



AFTER

ENGAGEMENT:

Environmental and Aboriginal cultural heritage due diligence checks were conducted. Before any work on the treatment commenced, the City Fire team also liaised with the City's Natural Area Conservation Ecologist and Natural Area Maintenance Coordinator.

Prior to work starting:

- Letters were sent to councillors and residents which explained both the works being done and an education piece on why woody weeds are bad in the bushfire context.
- Residents were encouraged to manage woody weeds on their property (for fire mitigation and environmental outcomes)
- A copy of 'Plants out of Place' delivered to all residents.
- Contact details for the City's officer were provided.
- Phone and in person conversations with impacted residents were held to discuss additional preparedness issues.



BEFORE



AFTER



DFES
Department of Fire &
Emergency Services

FOR A SAFER STATE

WA tsunami risk management – The culmination of partnerships and cutting-edge science

Matt Zanini, Adrian Brannigan, Department of Fire and Emergency Services, WA

World's deadliest hazard

The 227,000 fatalities from the 2004 Indian Ocean tsunami remind us that tsunamis were the world's deadliest natural hazard in the last century.

In Australia, large earthquake-generated tsunamis are most likely in WA (Fig.1), and this hazard poses some of the highest risks to our built environment.

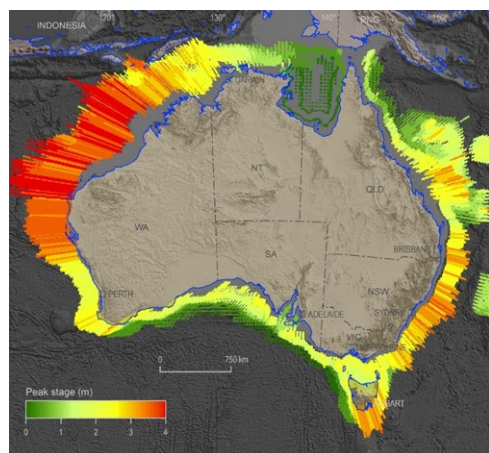


Figure 1: Geoscience Australia's 2018 Australian Probabilistic Tsunami Hazard Assessment estimates the average frequency of tsunamis with different sizes occurring in deep waters offshore of Australia. In Australia, large earthquake-generated tsunamis are most likely in WA.

Little was known about how tsunamis could behave closer to our shores. As a result, science-informed evacuation maps could not be developed to enhance community safety, and detailed knowledge of inundation risk was unavailable to inform mitigation activities, including land use planning. Evacuations were bound by general advice to move at least 10m above sea level, or 1km inland, when faced with a tsunami land inundation threat.

Australia's most extensive science-informed tsunami evacuation maps

Given the tsunami risk and limited decision-support products, the Department of Fire and Emergency Services (DFES) and Geoscience Australia (GA) collaborated to determine what earthquake-generated tsunamis could do when they come onshore.

The **WA Tsunami Inundation Modelling Project** uses recent technological advancements to develop Australia's most extensive regional-scale tsunami evacuation maps and understanding of onshore inundation. GA's tsunami scientists conducted high-resolution modelling of earthquake-generated tsunami inundation (Fig.2a), which DFES, in partnership with Local Governments, interpreted to develop tsunami warning areas and evacuation maps for the community (Fig.2b).

The project currently spans about 2,300 km from WA's southwest (Dunsborough) to the northwest (Onslow) and has informed approaches to tsunami risk management in Queensland and New South Wales.

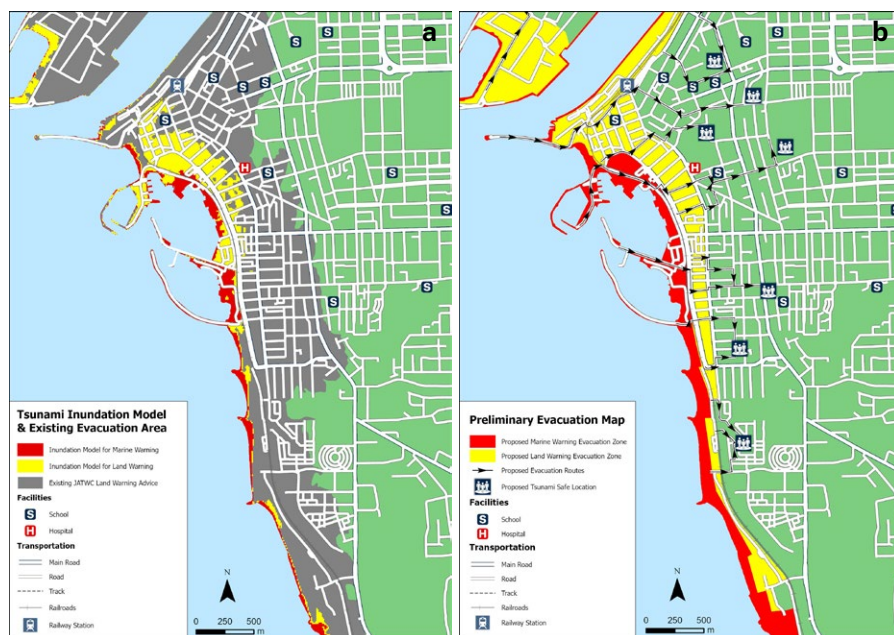


Figure 2: 2a. Example of a tsunami inundation map in the Fremantle area, with the colours showing model-derived land warning (yellow) and marine warning (red) zones. The landward limit of the land warning zone has a 1/2500 year inundation frequency, according to a moderately conservative (84th percentile) model of earthquake frequencies. In grey, the current land evacuation advice area, as defined by the Joint Australian Tsunami Warning Centre (JATWC). **2b:** Example of a preliminary science-informed tsunami evacuation map for the Fremantle area, showing the proposed locations of evacuation zones for marine and land warnings, safe locations and evacuation routes. The inundation models in Figure 2a inform this map.

Benefits of the project

- 1 The project has benefited from international best practice for tsunami emergency management.
- 2 Outputs will support community evacuations, inform land use planning, enhance community awareness, and be utilised to develop local exercises and scenarios that test agency skills and capabilities.
- 3 Improved understanding of tsunami risk has yielded clear operational benefits. When compared to general tsunami evacuation advice, the proposed, science-informed warning zones for Greater Perth **reduces evacuation of:**
 - People: 80% reduction
 - Schools: From 22 to 2
 - Nursing and retirement homes: From 15 to 3
- 4 Importantly, science-informed evacuation maps show that a public hospital is no longer in the tsunami warning area (Fig.2b).
- 5 This project demonstrates the clear benefits that robust partnerships and science deliver to effective emergency management and community safety for an unlikely, but potentially devastating hazard.

Acknowledgments:

• Geoscience Australia: Dylan Kendall, Gareth Davies, Matthew Macaulay
• Department of Fire and Emergency Services: Ant Sadler, Jamie Hunter, Rayen Gho, Robyn Parker, Sophie Edgar, DFES regional and local government staff of Midwest Gascoyne, Metropolitan, South West and Lower South West regions

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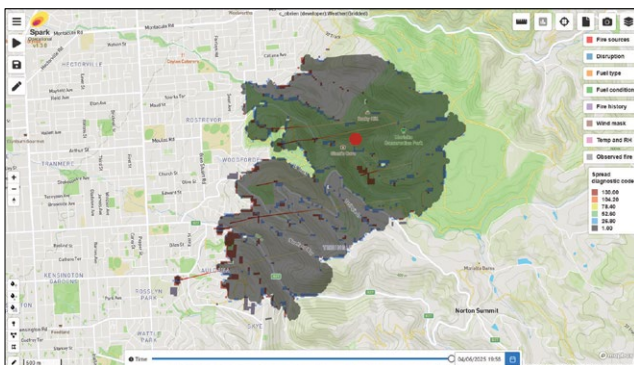
Contact us:

intelligence@dfes.wa.gov.au

What is Spark Operational?

- > Spark Operational is a joint project between AFAC and CSIRO and is designed for Australian conditions.
- > Spark aims to provide timely, actionable information that bushfire incident management can use with confidence.
- > Spark uses high resolution data, including weather forecast, topographic, fuel type, condition and age to simulate fire spread.
- > 9 fire spread models are used, with each model applied to the relevant fuel type.
- > Spark is customisable, with users able to customise most aspects of the models, inputs and outputs.
- > Spark is fully supported with users having access to training documents, a discussion forum and direct support.
- > Spark can be run locally or deployed on a server or cloud based system.

Recent Updates



Self Extinction

Self extinction will show why the fire isn't spreading. This can show if the lack of spread is due to fuel data, disruption or system user feedback.



Plume Visualisation

Plume visualisation has been added to allow users to gain a visual understanding of plume behaviour. The Plume model is a complex differential equation that simulates vertical plume motion based on fire properties and meteorological inputs.

Features

-  Customisable fire models
-  High-resolution weather data integration
-  Cloud-based and SharePoint integration
-  Support infrastructure

Benefits

-  Scalable and accessible
-  Flexible and customisable
-  Standardised procedures
-  Regular updates and support



Predicting Health Service Utilisation Increases During Heatwaves in Queensland: A Vulnerability Analysis

Hannah Mason¹, Simon Webster^{2*}, Kenneth Wong², Andrew Wynne-Jones², and Richard C Franklin^{1*}

¹ College of Medicine and Dentistry, James Cook University, Townsville, Queensland

² Queensland Fire Department, Brisbane, Queensland

* Presenting



Background

Heatwaves are becoming an increasingly persistent threat to human health due to climate change, leading to more frequent, intense, and prolonged events [1,2]. Health and emergency services face substantial increases in service demand during heatwave events, requiring efficient resource allocation and response planning [1]. The Queensland Fire Department has developed the Heatwave Impact Forecasting tool in partnership with Queensland Health to support targeted prevention strategies, messaging, and effective management of service delivery. This study aimed to evaluate whether existing community-level vulnerability measures can predict increases in presentations to the emergency department, hospital admissions, and deaths during heatwave periods compared to non-heatwave days in Queensland, Australia.

Approach

Emergency department, hospital admissions, and deaths data from Queensland (2016-2019) during warm season (October to March) were analysed. Heatwave days were defined using the Excess Heat Factor [3]. Incidence rate ratios (IRR) were calculated for each Statistical Area Level 2 (SA2) comparing health service utilisation during heatwave versus non-heatwave days. Vulnerability was assessed using a geometric mean of intrinsic vulnerability (including age, health status, and social factors) and capacity to respond (including socioeconomic factors) (Figure 1), using census data modelled for each SA2. Statistical models examined the relationship between vulnerability measures and various IRR thresholds (Figures 2-4).

Figure 1: Vulnerability Categories

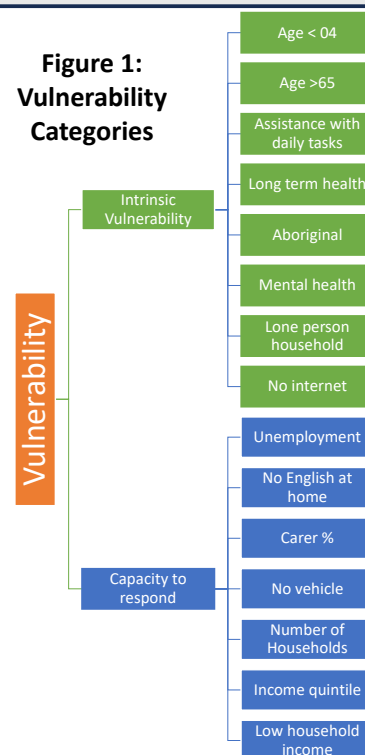
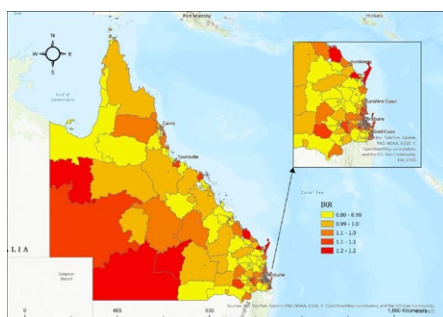


Figure 2: IRR: Hospital Admissions



FIRE-FIGHTING WATER DEMAND FOR EMERGING HAZARDS ON RENEWABLE ENERGY SITES IN AUSTRALIA

AUTHORS | Christopher Koch, Jack Tetley & Dr Amer Magrabi

As the global shift toward renewable energy accelerates, fire safety infrastructure must evolve to address the unique hazards associated with solar farms, wind power plants, Battery Energy Storage System (BESS) yards, and hydrogen production plants.

There are currently no Australian Guidelines or Standards that explicitly outline estimation of fire water demand and standard operating procedures for Lithium-Ion Battery installations necessitating a first-principles ground up approach based on regarding the following guidelines:

NSW (FRNSW) Large Scale External Lithium-Ion Battery Energy Storage System Guidelines (2)

Country Fire Authority (CFA) Renewable Installation Guideline and Fire and Rescue (1)



BESS Yard



Hydrogen Plant



Solar Farm

BESS SYSTEM CONSIDERATIONS

- **Standard Hydrant Requirements**
 - AS 2419.1 outlines open yard hydrant requirements
 - Each hydrant is to deliver 10 L/s for 4 hours simultaneously
- **Firefighter Water Application Limitations**
 - Direct water on BESS units is discouraged
 - Dense cell modules prevent water from reaching the fire's seat.
 - Risk of reignition due to residual heat and thermal runaway.
- **Fire Behaviour**
 - UL9540A testing shows most BESS units self-extinguish without propagation. However, adverse wind effects need to be considered.
 - Premature suppression may increase explosion risk due to trapped flammable gases.
- **Shift to Defensive Strategy**

Fire brigades now use a defensive approach.

 - Water is mainly used to cool adjacent units, not suppress fire directly.
 - Hence, open yard requirements become less onerous.
 - Reduced fire water demand and subsequent fire water containment.

SOLAR FARM CONSIDERATIONS

- **Solar Panel Activation**
 - Energy is generated when the panels are exposed to sunlight.
 - Photovoltaic cells are passive energy generators and cannot be turned off, creating a continuous electrical output.
- **Firefighting Hazard**
 - Persistent electrical hazard poses a risk of electrocution to fire fighters.
 - Water application cannot take place until the panels are isolated which can take a significant amount of time.
- **Mitigation**
 - To stop electricity generation, panels are covered to block sunlight.
 - A liquid blanket is sprayed to coat the panels, allowing safe firefighting to proceed.

CONTACT



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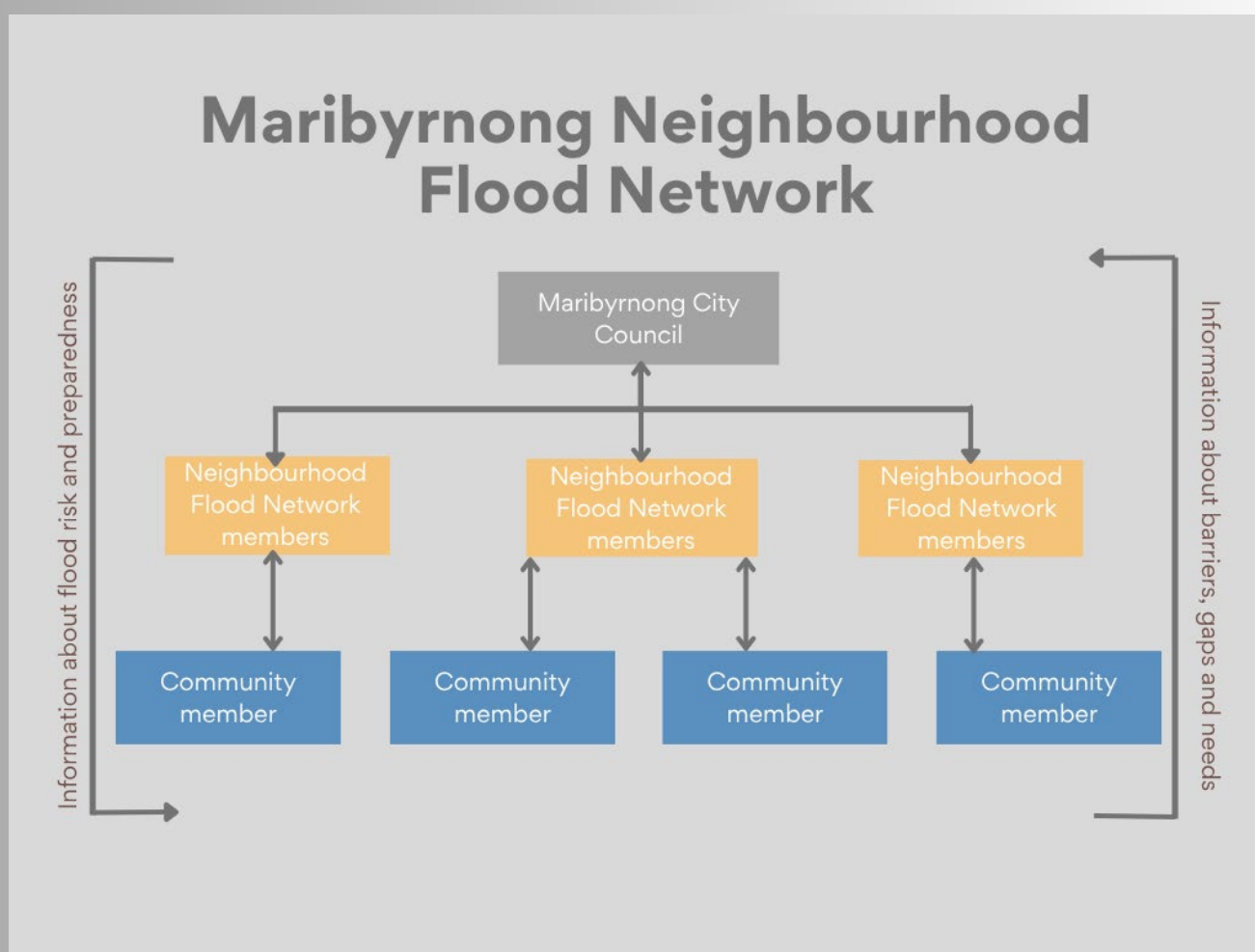
Maribyrnong Neighbourhood Flood Network: Community Leaders in flood risk and preparedness

Goal of the network

We know sometimes communities prefer to receive information from a friend or trusted community member.

The goal of the network is to equip these community leaders with resources and information to increase the reach of critical flood risk and preparedness information. The goal is to make this information accessible to all, particularly those who may face barriers receiving information through the existing channels.

Information Flow Graphic: how information is received and distributed



How does it work?

Community members across the at-risk area of Maribyrnong register to join the network.

Network members receive information and tools to inform of flood risk and preparedness. Network members then share this amongst their neighbours and contacts, a community leader-based approach to preparedness. The network members also relay information on local needs to Council to share with agencies as needed.

Indigenous disaster resilience research

Indigenous knowledge into practice



The April 2025 edition of the *Australian Journal of Emergency Management* features Indigenous-led research and utilisation of disaster risk reduction and resilience research and practice across Aotearoa New Zealand and Australia. Content includes the practices and knowledges from across these two nations. The purpose is to document and encourage incorporation of Indigenous people's knowledge into practice.

The Indigenous research edition was made possible in partnership with guest editors Lucy Kaiser (Massey University and GNS Science) and Dr Bhiemie Williamson (Monash University). Through the development of this edition, the guest editors, representing Aotearoa New Zealand and Australia respectively, were guided by a shared purpose to:

- Foster an indigenous-led and decolonial discourse in disaster resilience and emergency management
- Explore and enhance understanding of Indigenous perspectives and experiences in relation to disasters and other hazard events
- Highlight Indigenous leadership and excellence in disaster resilience and emergency response
- Explore structural similarities and points of difference in the experiences of Māori and Aboriginal and Torres Strait Islander peoples.

This edition was an opportunity to work with different sources of knowledge and give voice to Indigenous researchers and practitioners in the field of disaster risk reduction and resilience. In doing so, this edition contributes to a broader knowledge base and encourages new ways of thinking and working. This edition was also an invitation to emerging Indigenous researchers to develop and share knowledge that shapes the disaster risk reduction and resilience discourse in Aotearoa New Zealand, Australia and beyond.

Read the Indigenous edition of the *Australian Journal of Emergency Management* on the AIDR Knowledge Hub



About the edition's guest editors



Lucy Kaiser

Lucy Kaiser (Kāi Tahu, Kāti Māmoe, Waitaha) is a disaster social scientist specialising in Indigenous and community-centered emergency management. She is a researcher at GNS Science and Massey University in Aotearoa New Zealand, where she is also completing a PhD in emergency management. Her research explores disaster preparedness and resilience, particularly within Māori, Indigenous and rural communities, with a particular focus on Indigenous perspectives on climate change.

Lucy collaborates with iwi, hapū and local communities to develop culturally responsive strategies for managing natural hazards. Lucy has contributed to national and international discussions on disaster risk reduction, school preparedness, climate adaptation, and advocating for inclusive, evidence-based policies. She is also an active mentor and educator, supporting the next generation of social scientists in the field of emergency management.



Bhiemie Williamson

Dr Bhiemie Williamson is a Euahlayi man from north-west NSW with familial ties to north-west Queensland. He has led research into the impacts of disasters on Indigenous communities including examining the effects of the 2019–20 bushfires and 2022 Northern Rivers floods.

He is a graduate of the Australian National University and the University of Victoria, British Columbia, Canada. Bhiemie leads the National Indigenous Disaster Resilience project within the Fire to Flourish program at Monash University.

[KNOWLEDGE.AIDR.ORG.AU/RESOURCES/AJEM-APRIL-2025](https://knowledge.aidr.org.au/resources/ajem-april-2025)



Australian Government
National Emergency Management Agency

Australian Institute for
Disaster Resilience



What's New in Knowledge

A monthly round up of research, reports, and public interest journalism.

Each month, AIDR scans the literature on disaster risk reduction and emergency management to identify new reports, peer reviewed research, and public interest journalism.

This knowledge is organised into a range of themes and topic areas including:

- Systemic disaster risk
- Disaster risk reduction
- Consequences of disaster and recovery
- Hazards
- Children and young people
- First Nations knowledge
- Inequity
- Weather matters and climate change
- Health
- Governance, leadership and capacity building
- Knowledge management
- Technology

👍 We also focus on historical events as it is useful to investigate the past to help us learn. We round out with good news stories as a reminder that in this difficult work there are many positives.

To receive What's New in Knowledge, subscribe to Updates from AIDR



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Assessing Fire Severity and Extent across Hazard Reduction burns in the Blue Mountains, New South Wales

Levi Roberts

NSW Department of Climate Change, Energy, the Environment and Water, Katoomba

Introduction

Hazard reduction (HR) burning is a key strategy for managing wildfire risk by reducing fuel loads. However, effectiveness and extent are often poorly measured, with entire burn areas typically recorded as uniformly treated. Fire Extent and Severity Mapping (FESM) offers a more detailed approach, allowing us to assess variations in fire severity and post-burn recovery across the landscape.

Method

This study used FESM to evaluate fire severity across several HR burn sites in the Blue Mountains, New South Wales, conducted in spring 2024 and autumn 2025 (Figure 1). FESM uses satellite imagery and machine learning to classify fire impact into ecologically meaningful levels of canopy scorch and consumption (Table 1) (Gibson et al. 2020, Gibson et al. 2023). Maps are produced in near real time and published annually at the state-wide scale (NSW DCCEEW 2025). We analysed these outputs to improve mapping accuracy and explore how fire behaviour relates to environmental factors (fuel type, topography, weather) and operational techniques (lighting patterns, timing, duration).

Table 1 FESM severity classes

Severity class	Description	Percentage foliage fire-affected
Unburnt	Unburnt surface with green canopy	0% canopy and understorey burnt
Extent only	Burnt surface (grass fires)	100% burnt area
Low	Burnt understorey with unburnt canopy	> 10% burnt understorey > 90% green canopy
Moderate	Partial canopy scorch	20-90% canopy scorched
High	Full canopy scorch (+/- partial canopy consumption)	> 90% canopy scorched < 50% canopy biomass consumed
Extreme	Full canopy consumption	> 90% canopy biomass consumed

Table 2 Hazard Reduction variables

HR Name	Fuel Load (t/ha / OFH)	FBI	Burn Conditions (Temp °C / RH % / Wind km/h)	Execution
Blackheath Catchment	25 / Extreme	12-16	20 / 30 / 20-30 WNW	11-13 AUG 25
Upper Wentworth	25 / Extreme	8-10	23 / 36 / 10-15 ENE	10-13 APR 25
Blue Mountains Creek	25 / Extreme	7-13	23 / 36 / 10-15 VRB	17-21 APR 25
Glossop	20 / Very High	14-17	20 / 49 / 20-30 SSE	14-17 APR 25
Linden Ridge	20 / Very High	7-13	22 / 43 / 10-15 NE	9-16 APR 25
Euroka	20 / Very High	12-20	29 / 43 / 15-20 NE	19-22 MAR 25

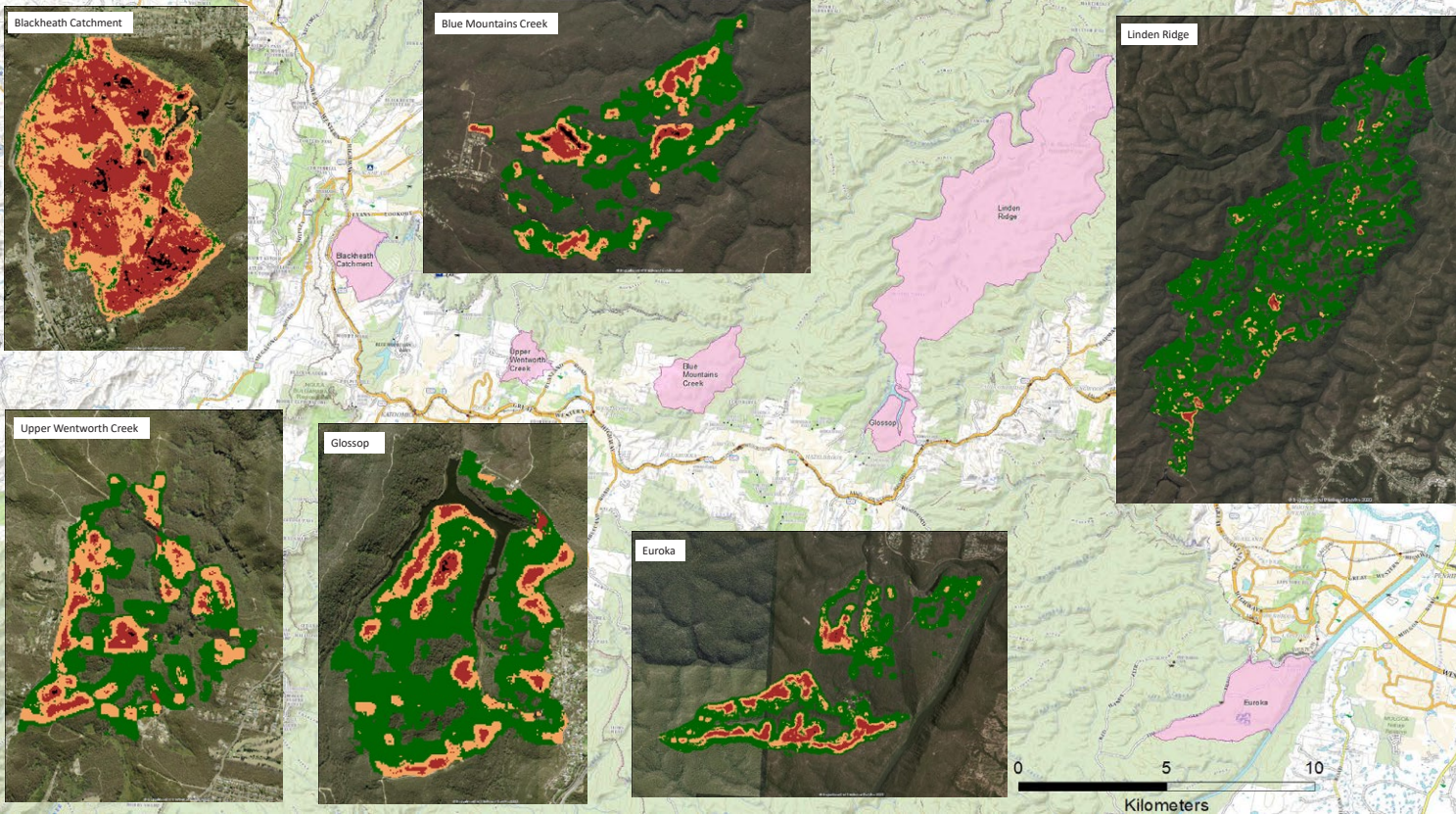


Figure 1 Blue Mountains 2024-25 HR's with FESM classes

Results & Discussion

Five HR burns were carried out over three weeks in autumn 2025 under similar conditions, with minor differences in weather and fuel loads (Table 2). A spring 2024 burn in the Blackheath Catchment was included for comparison.

FESM data (Table 3) showed consistent severity patterns across sites:

- **Low severity:** 39–64% of area burned (average: 49%)
- **Moderate severity:** 3-22% (average: 13%)
- **High severity:** 1-6% (average: 5%)
- **Extreme severity:** less than 1%

Unburnt areas were significant, aligning with overall burn prescription objectives of 60–70%, meaning 30–40% of each site remained unburnt. This reflects the mosaic nature of prescribed burning and has important implications for wildfire preparedness and ecological refugia.

Topography also influenced burn patterns. North and northwest-facing slopes burned more extensively downslope than south and southeast-facing slopes, highlighting the role of aspect during the autumn burn window.

FESM also helped assess compliance with burn prescriptions, such as targeted burn coverage, protection of sensitive areas (e.g., swamps, riparian zones) and minimising canopy scorch in koala habitat.

Table 3 FESM severity classes

	Blackheath Catchment		Upper Wentworth		Blue Mountains Creek		Glossop		Linden Ridge		Euroka	
FESM Severity Class	Area (ha)	%	Area (ha)	%	Area (ha)	%	Area (ha)	%	Area (ha)	%	Area (ha)	%
Unburnt	69	14%	69	33%	147	32%	35	14%	1428	38%	320	43%
Low severity	33	7%	81	39%	219	48%	155	64%	2184	58%	285	38%
Moderate Severity	176	36%	46	22%	63	14%	40	16%	126	3%	88	12%
High Severity	202	41%	12	6%	27	6%	14	6%	27	1%	48	6%
Extreme severity	14	3%	0	0%	2	0%	0	0%	1	0%	0	0%

Conclusion

FESM provides a powerful tool for evaluating HR burn outcomes. It enables:

- More accurate mapping of burnt and unburnt areas
- Better understanding of fire severity variation within burn blocks
- Verification of burn objectives, such as limiting scorch height and protecting sensitive habitats

These insights support more adaptive, effective, and ecologically responsible fire management.

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RFS

Fire Behaviour Predictions and Advice Standardising Fire Behaviour Analysis

A cross-jurisdictional approach to enhanced interagency collaboration in Western Australia

Author/s: Wendy Smith (RFS), Glen Daniel (DFES) and Tony Smith (DBCA)

PROJECT GOALS AND EXPECTED OUTCOMES



Project Context:

Create a standardised **set of interagency processes**, approved models, tools, and workflows for fire spread predictions within Western Australia. Establish a **consistent and coordinated approach** across multiple agencies involved in fire management.



Intended Outcomes:

Consistent processes and workflow for providing fire behaviour predictions and associated advice and information developed based on **best practice**, incorporating **transparent and repeatable methodologies**.

KEY ACHIEVEMENTS: First comprehensive fire behaviour analysis document for Western Australia, establishing formal FBAN roles within AIIMS structure through systematic cross-jurisdictional knowledge exchange and evidence-based stakeholder consultation.

PROJECT OVERVIEW

This project developed the WA FBAN document and associated templates through a systematic seven-stage process involving cross-jurisdictional knowledge exchange between WA fire agencies and NSW Rural Fire Service. The development began with interviews and grey literature review just prior to Workshop 1, followed by initial feedback collection. Interviews and literature review continued after Workshop 1, informing the development of draft FBAN documents and templates. Systematic feedback collection on these drafts led to Workshop 2 for discussion of feedback themes and document refinement, culminating in final draft documents and templates requiring endorsement by both agencies. Throughout the project, the agency representatives ensured their agencies' operational expertise and requirements were fully integrated into the development process. This comprehensive process aimed to achieve the project's intended outcomes.

PROJECT TEAM

Wendy Smith- Project Lead

Bush Fire Analyst, Community Risk – Predictive Services (NSW RFS)

Glen Daniel- DFES Agency Representative

Director, Office of Bushfire Risk Management

Tony Smith- DBCA Agency Representative

Fire Planning Officer, Fire Management Services Branch



KEY PROJECT FEATURES

Comprehensive Engagement – 25+ ongoing practitioner interviews, two structured workshops, and 2-month consultation period with a range of stakeholders across Fire behaviour expertise, operational roles, coordination roles and supporting specialists

Iterative Development Process – Interactive methodology integrating stakeholder input: interviews and grey literature review Workshop 1 → Draft FBAN documents & templates → 2-month consultation period → Workshop 2 → Final deliverables

Evidence & Theme-Driven Design – Initial consultation themes directly shaped document structure, followed by Workshop 2 feedback themes that guided refinements, incorporating best practice principles developed from multiple coronial inquiries (2015-2024)

Cross-Jurisdictional Knowledge Exchange – Systematic knowledge transfer from NSW RFS frameworks and operational systems, plus a comprehensive review of fire behaviour analysis documents/ operational procedures from other states.

Contextual Adaptation – Tailored for WA's unique operational context, incorporating formal FBAN roles into the existing AIIMS structure for practitioners where fire behaviour analysis is not their primary role

Comprehensive Operational Foundation – Comprehensive operational procedures, standards and templates including A3 Fire Spread Prediction Map, Analysis Report template, Handover Notes, ICS forms, and Aide-Memoire

DFES • DBCA • NSW RFS
Commonwealth Disaster Ready Fund



SCAN ME



www.ses.nsw.gov.au/local-flood-insights

NSW LOCAL FLOOD INSIGHTS:

Innovation in educating flood risk management

NSW Local Flood Insights have been developed for most river basins in NSW and have been publicly available since October 2024.

Flood risk data analytics turns information into actionable insights, empowering communities to make informed decisions.

By prioritising community-centred flood risk prevention, preparedness, and response, the initiative navigates challenges within emergency services management.

Melissa Daley | Manager Geospatial Intelligence
gis@ses.nsw.gov.au



COMMUNITY STORIES

Provides local experiences of floods and personal impact



COMMUNITY FLOOD RISK STATISTICS

Outlines property and people at risk of flood in a community



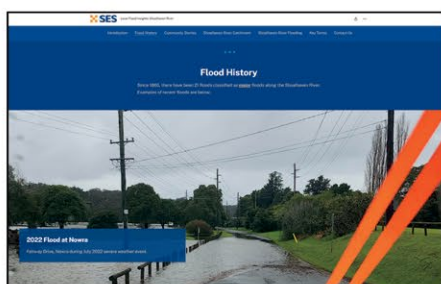
FLOOD RISK MAPPING

Community facilities, campgrounds and recreation areas



FLOOD GAUGE INFORMATION

Minor to major flood heights at key warning gauges

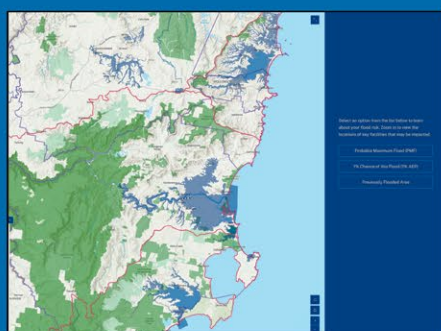
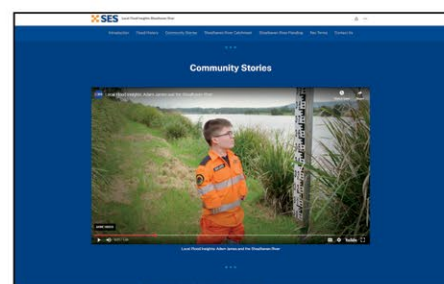


FLOOD STORIES

Every **Local Flood Insights** incorporates multiple stories from community members including farmers, school teachers, emergency volunteers, and local residents telling their personal story during floods.

Images in and around the community show how floods can close roads, isolate communities and impact public recreation facilities.

Historic and record floods are shown with images from the 1950s to the 1990s.



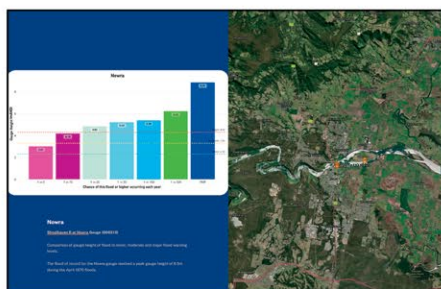
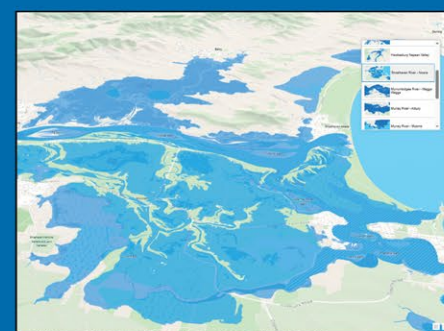
UNDERSTANDING FLOOD RISK

River basin key features, topography and formation is summarised with riverine flood risk behaviour in and around local communities.

Community members can find their property on the interactive flood risk maps to determine if they live in an area at risk of flooding.

Visitor Information shows where caravan parks, national parks and state reserves are in flood risk areas with links to tourist information.

The **NSW 3D Flood Viewer** enables viewing the flood risk information in a 3D Tool.



FLOOD HEIGHTS

Local Flood Insights provides for the first time a graph for each community key river warning gauge showing the **Annual Exceedance Probability** flood levels (ie. the chance per year of a flood exceeding that flood height level).

Flood Heights are provided in relation to Minor, Moderate and Major Flood Warning levels provided by the **Bureau of Meteorology**.

A summary of the number of floods that have exceeded the major flood warning level and the record flood level are noted for the community.



"Local Flood Insights provides visualisations to enhance community engagement of local flood risk, through compelling storytelling"

Nicole Hogan - Assistant Commissioner, NSW State Emergency Service



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The impact of heatwaves on mental health and the urgent need for awareness.

Gabriela Stilita — Second Chance Psychology

1 Introduction

It's well known that climate change is responsible for several health impacts, from respiratory and cardiovascular issues to malnutrition and infectious diseases. Recent evidence show that climate change causes a huge and deleterious impact on our mental health, and **heat** in particular is considered the "biggest killer". Despite this, mental health professionals are not well versed to address those impacts, causing missed opportunities for health prevention and health intervention in the context of heatwaves.

2 Heat

As homeothermic organisms, human beings generate a lot of heat and tightly regulate their temperatures around 37°C (T_{core}). The body can control the amount of heat lost (sweating, vasodilation, panting) or gained (vasoconstriction, shivering, metabolic production). Vasodilation and sweating capacity to cool our body is related to a series of factors, like air temperature, air velocity (winds) and humidity. Both can cause significant strain in our body, especially heart and kidneys:

- Vasodilation decreases blood pressure - $\uparrow$ heart rate
- Sweating $\rightarrow$ dehydration $\rightarrow$ hyperkalemia (sodium and fluids)

3 Heatwaves

According to the Bureau of Meteorology, "A heatwave is when the maximum and minimum temperatures are unusually hot over 3 days. This is compared to the local climate and past weather".

Heatwaves are the Australia's most dangerous natural hazard, responsible for 78% of all injury hospitalizations related to extreme weather between 2012-2022.

2019
43 extremely warm days³, More than triple than any year before 2000

4 Pathways

The casual pathways of how heat impacts our mental well-being are highly complex and not fully understood yet, as several variables are at play, like:

- Dehydration
- Humidity
- Socio-economic determinants of health
- Heat exposure
- Social cohesion
- Energy insecurity
- Outdoor work
- Heat perception
- Air pollution
- Age
- Cardio-respiratory health
- Pregnancy
- Diabetes
- Medication usage
- Mental health history

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5 Heat and Mental Health

Between 2000 and 2018 at least 354 Australians died due to heatwave. But besides the deaths, heat has a huge toll in mental health:

- Increase of 9.7% of hospital attendance for mental health illness during a heatwave, and , up to 2 weeks after the heat event.
- Heatwaves increased hospitalizations and post discharge deaths of Alzheimer's patients by 51%.
- **Heat is positively associated with suicidality.** 0.5% of suicide deaths in Australia between 2000-2019 were attributed to heat abnormalities. For every 1°C above average daily mean, youth suicidality presentations at NSW ED increased by 1.3%.
- High temperature is positively correlated with violent behaviour, including rape, homicide and domestic violence.
- Heat decreases total sleep time and increase sleep disruption. Also, higher nocturnal temperature causes increased severity of obstructive sleep apnea.
- Increased delirium, cognitive impairment and fatigue.

What is more, common medication used by mental health consumers impact our capacity to manage heat, increasing its impact on our body:

- Antipsychotics and serotonergic drugs cause hyperthermia, and together with antihistamine and anticholinergic decrease our capacity to eliminate heat. That's particularly dangerous in the context of a heatwave.
- Selective serotonin reuptake inhibitors, opioids and tricyclic antidepressants cause sweat inhibition.
- Thiazide diuretics, antidepressants, and anticonvulsants cause hyponatremia (low blood sodium concentration), which is exacerbated in heatwaves due to the increased fluid intake.

7 Conclusion

Considering the serious impacts caused by heat in mental health, increasing awareness is urgent. Consumers and healthcare professionals should be well equipped to prepare themselves for future heatwaves.

Furthermore, mental health providers should consider heat and other environmental factors when doing cognitive and clinical assessments, prescribing medication, and developing safety plans. Telehealth appointments should be offered during heatwaves to avoid unnecessary travel.

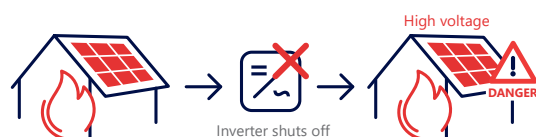
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PV designed to prevent fire hazards

Fires that start inside the building

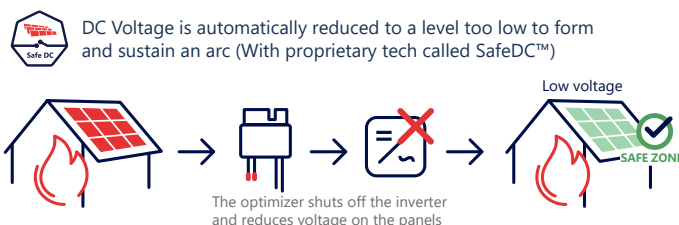
During daylight hours, PV generates high DC voltage which a traditional PV system is not designed to control

Traditional solar systems



No built-in capability for first responders to reduce DC voltage

SolarEdge (based on MLPE - module level power electronics)

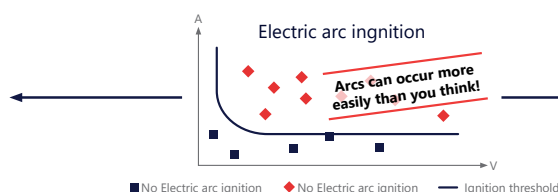


DC voltage can also be manually reduced by first responders with "Rapid Shutdown" - a mandatory requirement in US, Thailand and more

Fires start from an arc in the solar system (usually in DC connectors)

Traditional solar systems

Some can detect the arc once it forms, but cannot prevent or stop the arc



SolarEdge

Introduced patented Sense Connect technology designed to prevent arcs by identifying irregular temperature in DC connectors and shutting it down

Traditional solar systems

Traditional systems have no mechanism to address this threat

What if an arc originates between DC cables?

SolarEdge

SolarEdge technology can intervene

SolarEdge technology is favoured by insurance companies & solar organisations

"It is recommended to apply Module Level Power Electronics"



"SolarEdge Sense Connect and SafeDC exceed global safety regulations"



"Named SolarEdge as a preferred MLPE solution"



With over 3.8 million installations around the world, SolarEdge is dedicated to preventing fires at our sites and to keeping you safe while you work. SolarEdge stops hazards in their tracks.

solaredge

SOUTH AUSTRALIAN BUSHFIRE RISK ASSESSMENT

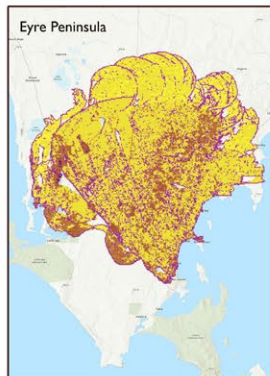
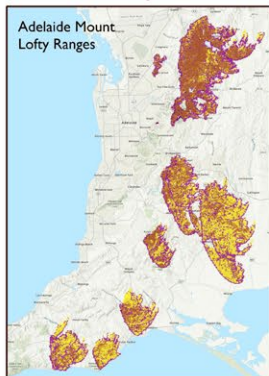
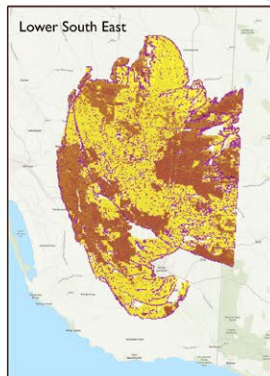
There is a requirement for a state level assessment of the catastrophic and major consequences that significant bushfires will have across the **South Australian** landscape under a changing and erratic climate.

Exploratory Scenarios - For a Plausible Bushfire Hazard Future

Using Phoenix RapidFire and SPARK bushfire modelling software incorporating future climate trends*

A tool for thinking – Not predicting – Where Future Probabilities outweigh Past Events

Starts by asking and then discussing the 'So What' and 'What Now'



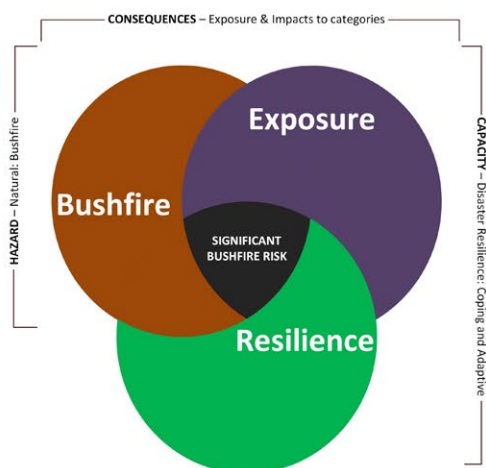
*These scenarios do not factor in suppression

AEIP Exposure Snapshot

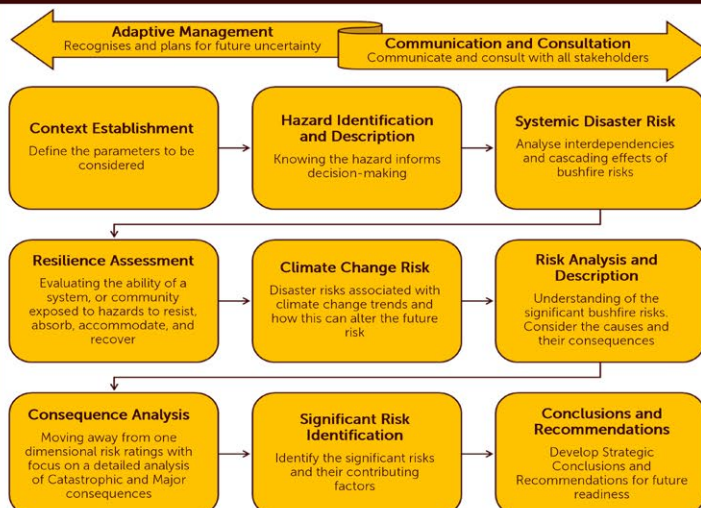
	Population of 2.8 million with 20% aged over 65 and 25.5% under 14
	2.2% are Indigenous
	765,388 Residential Dwellings 375,718 constructed pre-1980 \$550bn residential reconstruction value \$51bn in contents value
	3,923km of Major Roads 16,243km of Arterial and Sub-Arterial Roads
	Power Stations – 31 Major Renewable and 18 Major Fossil Fuel 121 Transmission Substations 7,097km of Transmission Electricity Lines
	27,055 Commercial and 6,202 Industrial buildings
	A total of \$350bn reconstruction value of commercial and industrial building assets
	782 Pre/Primary Schools 94 Secondary Schools 17 Tertiary Schools/Campuses
	18,856 Primary Producers including: • 7,553 Sheep, Beef Cattle, and Grain Farming • 2,564 Agriculture and Fishing Support Services • 2,811 Fruit and Tree Nut Growing

Risk Assessment Methodology

Using Resilience as a metric that can be expressed and strengthened as opposed to highlighting a level of vulnerability that can create apathy and disconnect from the community.



Risk Assessment Process



Community Resilience and Exposure



The level of community resilience and exposure to a significant bushfire event directly impacts the level of risk and extent of consequences.

Climate Change and Bushfires



The effects of climate change will significantly influence the consequences of significant bushfire events in South Australia in the next 25 years.

Risk Management Frameworks



Existing risk management frameworks need to integrate systemic disaster risk awareness and have resilience assessments built into them.

Systemic Disaster Risk



The systemic disaster risk across the consequence categories - People, Ecological Communities, Economy, Public Administration, and Social Setting - is highly interconnected and interdependent.



State Bushfire
Coordination
Committee



Future Challenges



Managing bushfire risk is increasingly complex due to climate change, population growth, rising costs, land use planning, and supply chain demands. Decision-makers must adopt adaptive approaches, exploring potential future scenarios.

Integrating climate change effects into the bushfire risk assessment in **South Australia** is crucial. This requires a systemic approach that considers all consequence categories and their interdependencies, along with an adaptive risk management framework to navigate the complexities of a changing world.

In the spirit of reconciliation the SBCC acknowledges the **Traditional Custodians** of country throughout **South Australia** and their connections to land, sea, and community. We recognise them as the **traditional land managers** and support their right to practice **care for country** using traditional knowledge.

REDUCING BUSHFIRE RISK AND INCREASING BIODIVERSITY



Integrating landscape management methodologies to drive positive outcomes



BUSHFIRE

A wildfire that started near a rail corridor affected 30 hectares of endangered grassy eucalyptus woodland at HMAS Cerberus (Victoria). The high intensity fire scorched the ground severely impacting the native vegetation association present, while also providing an opportunity for weed species to flourish.

2003



RECOVERY

With native flora outcompeted and a continuous fuel ladder, bushfire risk was high and landscape health was poor. A combination of targeted vegetation management removed invasive wattle while retaining key native species. The result was a thick mulch layer that settled to suppress weeds and increased sunlight exposure to the soil.

2018



CONTROLLED BURN

A low-intensity mosaic burn was used to break down the mulch layer and stimulate the recruitment of native herbs, orchids, and grasses, typical of the site's original Ecological Vegetation Class. This burn played a key role in reintroducing sustainable land management practices aimed at triggering natural landscape regeneration.

2022



SPECIES RICHNESS

Now rich with native herbs, shrubs, grass trees, banksia, Sheoaks, sedges & rushes, home to echidnas, wallabies and native birds, the landscape is healthy and poses a lower risk from fire spread due to the vegetation composition, resulting in a safer base for the Department of Defence.

2025



Understanding extreme merging bushfires through physics - Junction fire behaviour and dynamics at various scales

Ahmad Hassan^{1,2}, Khalid Moinudin², Gilbert Accary^{2,3} and Jason Sharples⁴

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³ School of Engineering, Lebanese American University, Byblos, Lebanon

⁴ University of New South Wales, UNSW Canberra, Act, 2600

Understand junction fire dynamics: physics of propagation, fire regimes, and the development of scaling laws across different scales.

Extreme bushfires pose risks worldwide, with merging fires being particularly intense and difficult to predict. This research explores the physical mechanisms behind junction fires to improve our understanding of their complex behaviour and to develop scaling laws describing how they evolve across various scales.

Objectives

- Develop a thorough understanding of the complex dynamics of junction fires.
- Investigate the effects of slope angle, intersection angle, and wind speed on fire behaviour.
- Conduct a dimensional analysis of the problem based on Byram's Convective Number.
- Develop a robust modelling tool to simulate junction fires in detail and parametrise the problem to be incorporated in an operational models.

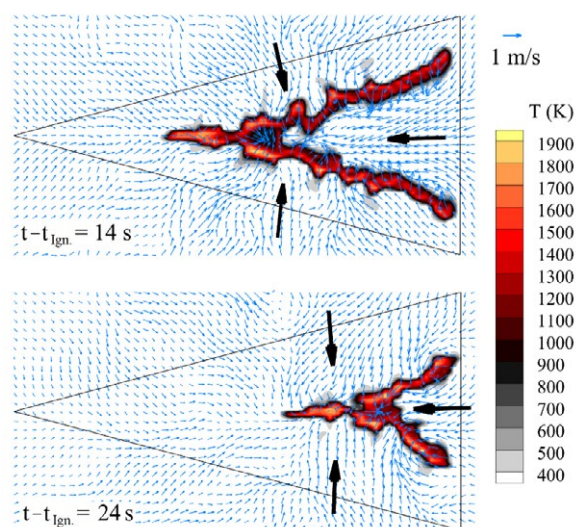
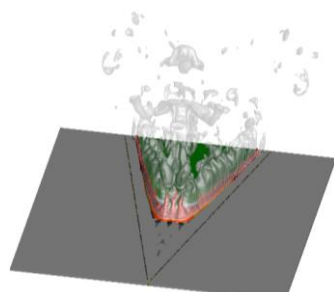
Methodology and Numerical Modelling

- Use FIRESTAR3D, a physics-based bushfire model that simulates various fire phenomena.
- Conduct numerical simulations replicating laboratory and field-scale experiments.
- Explore the effects of parameters such as slope angles, junction angles, wind speed, fuel moisture content, etc.
- Merge the results into a unifying scaling law.

Preliminary Results and Discussion

- FIRESTAR3D effectively reproduced experimental results, demonstrating its capability to simulate junction fires.
- The dynamics of junction fires were found to be strongly influenced by the properties of flow around the flames.
- On flat terrain with no wind, the deceleration in fire spread is caused by changes in flame inclination and trailing flame separation, which widens the angle between the junction-fire arms and results in a lower ROS.

We now aim to conduct a dimensional analysis to establish similarities between real-world wildfire scenarios and scaled-down experimental or numerical models. This would help develop effective wildfire management strategies, ultimately contributing to the protection of lives, property, and ecosystems from wildfires.



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AFAC Data Governance



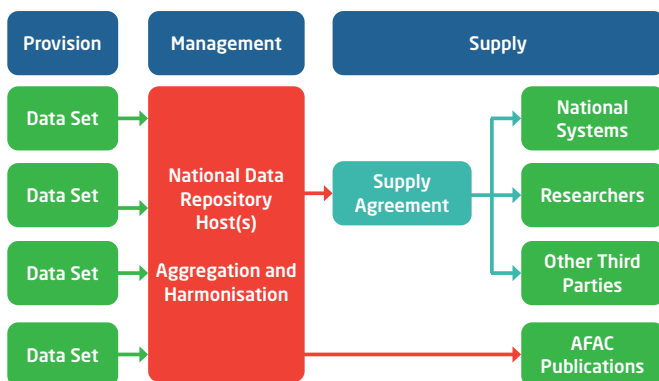
The AFAC Data Governance Framework establishes the policies, procedures, standards, and metrics that will guide data management practices and decision-making.

Problem

- > AFAC curates data from member agencies for various purposes, including databases like AIRSNAT, the National Resource Sharing Centre, the Emergency Management Professionalisation Scheme, and ARENA for different emergency management operations.
- > Nationally operated predictive systems such as the Australian Fire Danger Rating System and Spark Operational necessitate unified national datasets.
- > Each data set currently has its own data governance arrangements.
- > There is a potential requirement for the development of national data collections for other hazards in the future.
- > There's increasing demand for direct access to national data collections by researchers and commercial entities for better outcomes, leading to the need for consistent data sharing arrangements.



AFAC national collections overview



Solution

AFAC identified the need for a national data governance framework to govern AFAC data assets, and data provided to AFAC from external organisations for inclusion in national collections, including data shared with external parties, ensuring proper authority and control over these assets.

The framework is designed to specify what considerations are required for:

- > Provision of data for national collections to either AFAC and onto the data host, or to the data host directly.
- > Management of the national collections by AFAC or the data host.
- > Supply of data from the national collections through data sharing to third parties (e.g. national operational systems, researchers, other third parties etc) and release via publications.

Benefits to AFAC and stakeholders

- > Ensure strategic alignment of AFAC's data assets with emergent emergency service business and operational requirements.
- > Govern the sharing and utilisation of data supplied to AFAC by external organisations, rather than governing the member agencies' data directly.
- > Confidence in decision-making through accurate, accessible, and relevant data.
- > Ensure compliance with regulations and data handling standards.
- > Protection of stakeholders' interests and requirements in data management.
- > Formalisation of roles and responsibilities.
- > Provide clear and transparent policies and accountability mechanisms to enhance confidence and build trust.
- > Data protection through documented policies and procedures, ongoing communication, education and monitoring.



Identifying and defining landscape dryness thresholds for fires across Australia

Dr Jamie Burton¹ Brett Cirulis¹, Dr Hamish Clarke¹, Dr Luke Collins², Dr Rachael Nolan³, Prof Trent Penman¹, Dr Jane Cawson¹

1. FLARE Wildfire Research, The University of Melbourne, Victoria, Australia

2. Natural Resources Canada, Pacific Forestry Centre, Canadian Forest Service, Victoria BC, Canada

3. Hawkesbury Institute for the Environment, Western Sydney University, NSW, Australia

Background

Fire managers need landscape moisture information to make informed decisions at various levels, from seasonal planning to prescribed burning. Improvements in modelling and remote sensing technologies have led to many new landscape moisture metrics. Yet, very few have been integrated in fire decision making.

Our research seeks to bridge this gap by identifying which metrics have the highest potential for use in decision making.

To achieve this, we combined an expert elicitation with a qualitative review of existing landscape moisture metrics. Specifically, we asked:

1. What fire management decisions rely on moisture information?
2. What attributes make a moisture metric useful for fire management decision-making?
3. Which landscape moisture metrics have the highest potential to inform fire management decisions in Australia?

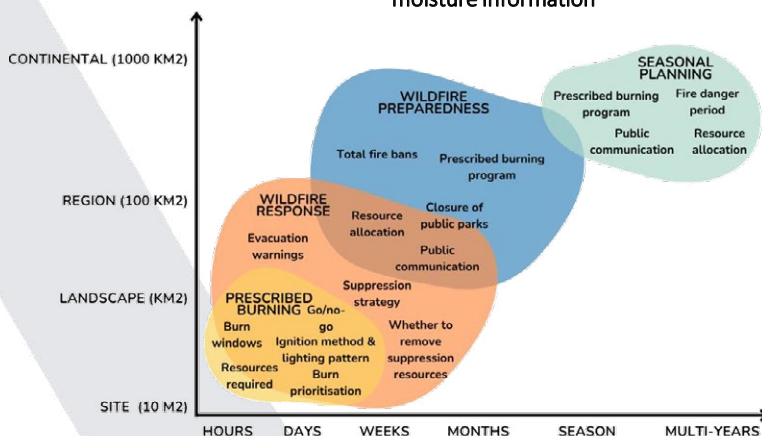
Key findings

- Information needs, and the attributes of an 'ideal' moisture metric, vary depending on the type and scale of the decisions
- Fire managers require metrics that are widely-applicable, readily available for use and provide up-to-date information
- Forecasting ability was important for all scales of decision making except seasonal planning
- For wildfire response and prescribed burning, metrics needed to have high spatial (20-100 m) and temporal resolution (sub-daily)
- We identified 25 moisture metrics that could be used to inform decision making in Australia
- Soil and drought metrics best suited decisions relating to seasonal planning
- Atmospheric and fuel moisture metrics were better suited for wildfire preparedness and response decisions at finer scales

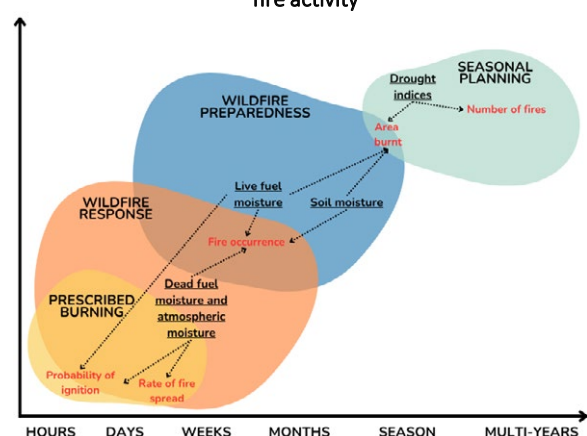
Next steps

- The next phase of this project will involve a quantitative assessment of the most promising subset of metrics, with a focus on two key decision-making scales: seasonal planning and wildfire preparedness

Key fire management decisions that use moisture information



Linking decisions to moisture metrics and fire activity



Further information

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Will the revolution be decentralised? Risk and resilience in the future energy system

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³ School of Humanities and Social Sciences, La Trobe University, Victoria

Exploring stakeholder perspectives on decentralisation, risk and resilience in Australia's energy transition

Driven by the imperatives of decarbonisation and affordability, Australia is undertaking the transformation of its energy system, replacing aging infrastructure with new, distributed technologies. In a context of increasing climate risk, how do stakeholder perspectives figure in shaping our future energy system and resilience to natural hazards?

Natural hazards challenge electricity services

The increasing severity of climate impacts requires consideration by policymakers and energy system operators.

While greenhouse gas emissions and economics dominate discourse on the energy transition, the increasing risks to electricity networks and community wellbeing posed by natural hazards is comparatively under-explored.

Recently, extreme weather has caused network outages of unprecedented scale, impacting communities' capacity to respond to and cope with disasters. The energy transition must therefore account for such risks in a context of changing technology and a contentious political landscape.

Decentralisation as a form of resilience?

The decentralisation of the energy system offers both benefits and challenges.

The transition to a decentralised energy system run on variable, inverter-based resources is contested, and presents a new profile of operational considerations and risks to system operators.

However, the uptake of distributed energy technologies has also enabled new network configurations such as the development of microgrids, which promise to support community resilience to natural hazards and network outages.



Damaged transmission towers at Anakie in Melbourne, Wednesday, February 14, 2024. Photo: AAP/Con Chronis

Research design and questions

Following a Science and Technology Studies (STS) approach to ethnographic case studies, this project will investigate the following questions:

- How do climate-driven natural hazards figure in energy system planning?
- How does the decentralisation of the energy system affect the worlds of communities exposed to natural hazards?
- To what extent are stakeholders' expectations of the future enacted through energy transition planning, policy, and interventions?

Further information

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Improving free topography data for more reliable flood modelling in data-scarce regions

Michael Meadows, Prof Simon Jones and Assoc Prof Karin Reinke

Faculty of Geospatial Science, School of Science, RMIT University, VIC

Reducing vertical errors in DEMs using an ensemble of specialised models

Flood assessments need accurate topography data but often rely on free global Digital Elevation Models (DEMs), despite well-known errors. Ensembles of prediction models (specialising by land cover) can reduce these errors.

Can we predict vertical errors in DEMs?

DEM errors occur where satellites can't "see" the ground surface (e.g. under vegetation or buildings). We used high-accuracy elevation data from 65 airborne laser surveys around the world (18.2 million data points) to assess these errors and to evaluate supplementary datasets that might help to **explain/predict** them. These included forest canopy maps, building footprints, night-time light intensity, topographical derivatives, Synthetic Aperture Radar (SAR), and multispectral imagery.

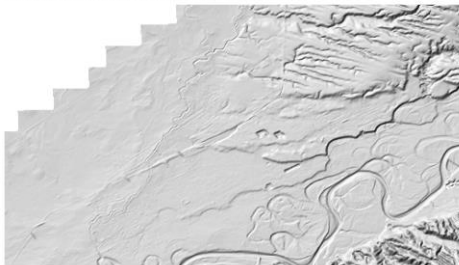
Are separate prediction models useful?

A machine learning model trained to predict DEM errors using reference data from forest sites doesn't perform well if applied to a city. We developed a **transferability assessment** framework to identify which classifications are meaningful (e.g. land cover, landforms) and to explore training data sensitivities. This analysis informs the development of model ensembles, made up of specialist sub-models trained on subsets of the training data (e.g. separate models for forests and cities).

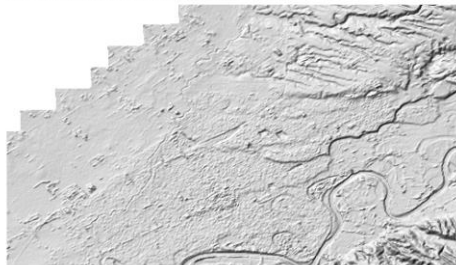
How do we optimally combine them?

The maps below show the application of a preliminary **ensemble model** (six members, specialised by land cover) on a test site in New Zealand (unseen during model training). Vertical errors are reduced (RMSE down by 61%) without smoothing genuine topography features. We are now developing a more advanced version, using Vision Transformer (ViT) models and a meta-model trained to optimally combine the predictions made by each of the ensemble member models.

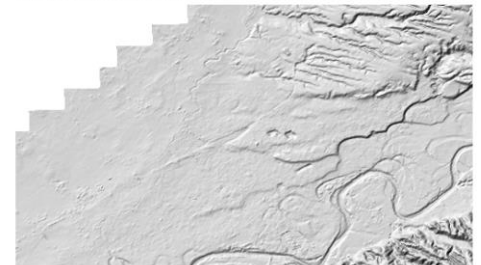
1. Ground truth (airborne LiDAR survey)



2. Copernicus DEM (before correction)



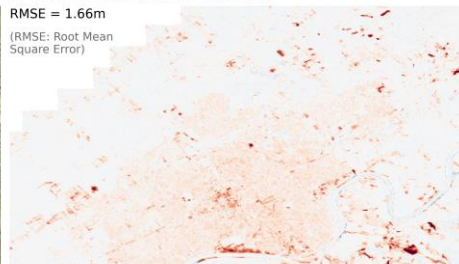
3. Copernicus DEM after corrections by ensemble model



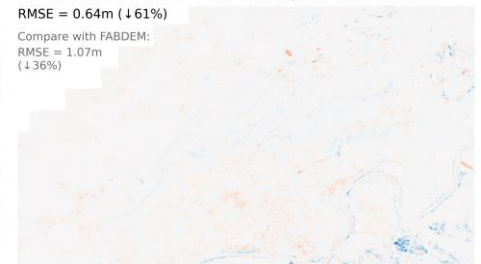
4. Satellite imagery



5. Vertical errors (before correction)

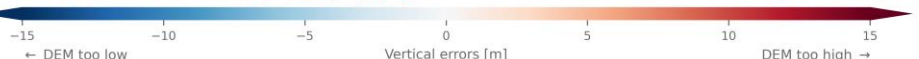


6. Vertical errors (after corrections by ensemble model)



Palmerston North, NZ

Reference data provided by LINZ | Toitū Te Whenua



Further information

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Investigating surface-to-crown fire transition: Impact of wind speed and Crown base height



Natural
Hazards
Research
Australia

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Forest fires pose significant global risks, causing loss of life, property damage, and environmental harm. Predicting the condition necessary to cause transition of fires from surface to crown is critical in developing a clear forest management policy to combat the threats of wildfires. However, the transition depends on various factors like fuel types, terrain, and weather. This study utilizes a physics-based fire model to answer this research query by exploring how the impact of crown base height and wind speed have on the transition from surface fire to crown fire.

Methods

We used Fire Dynamics Simulator (FDS) 6.8 to simulate the fires shown in Figure 1. The surface fuel load was 5.4 kg/m² (pine needles), fixed fuel moisture content of 5%. Crown base height (CBH) took values 1 m, 5 m, and 10 m corresponding to tree heights of 12 m, 17 m, and 25 m, respectively. Wind speeds were varied between 3–10 m/s (10.8–36 km/h).

Results and Discussions

The crown mass loss rate increases with wind speed across all cases with a fixed (CBH). Stronger convective heat transfer and deeper flame penetration into the crown accelerates burning. We assume a sustained crown fire occurs when mass loss exceeds 80%. Losses between 65% and 80% represent intermediate crowning, while values below 65% indicate an incomplete transition.

Table 1. Crown mass loss for all cases

CBH10W3	CBH10W6	CBH10W8	CBH10W10
16.2 %	32.5 %	48.6 %	49.8 %
CBH5W3	CBH5W6	CBH5W8	CBH5W10
58.9 %	66.3 %	72.7 %	68.7 %
CBH1W3	CBH1W6	CBH1W8	CBH1W10
94.4 %	95.1 %	95.8 %	94.5 %

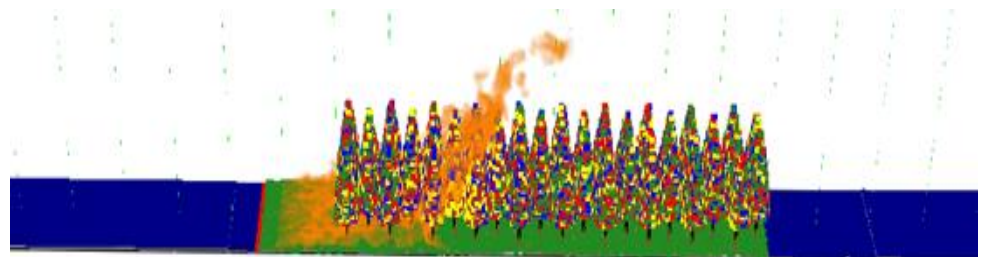
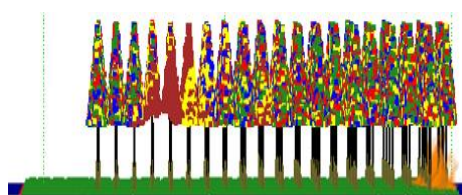
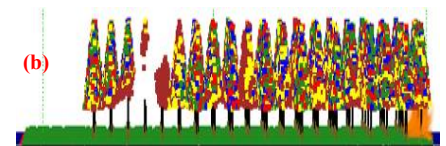


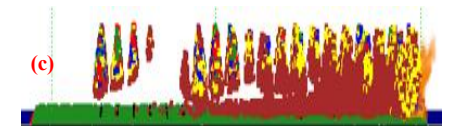
Fig. 1. Smokeview screenshot of the forest



(a)



(b)



(c)

Fig 2. Smokeview screenshots for (a) CHB10W6 (b) CBH5W6 (c) CBH1W6

As shown in Table 3, (CBH) and wind speed significantly affected crown mass loss. At CBH 10 m, crown mass loss increased with wind speed, but crowning was not sustained. Lowering CBH to 5 m led to higher mass loss, suggesting greater crowning potential. At CBH 1 m, crown mass loss exceeded 94% across wind speeds, indicating sustained crowning. Figure 3 presents Smokeview screenshots at the end of the simulation for three cases with 6 m/s wind speed across all simulated CBH values.

Conclusions

CBH strongly influences crowning probability, while wind speed has a greater effect at higher CBH but stabilizes at high speeds due to horizontal heat transfer. Simulations align well with the Cruz model in 9 of 12 cases. However, limitations such as fixed moisture and simplified forest structure highlight the need for future studies with varied moisture and fuel loads.



Further information

For additional information scan the QR code or contact:

Mohamed Sharaf, PhD student at Victoria University

Email: Mohamed.Sharaf@live.vu.edu.au

Daily temperature records across Australia are changing, with coastal and inland areas responding differently

Tinula Kariyawasam,¹ Prof Inge Koch,¹ Prof Gary Bryant,¹

¹ School of Science, RMIT University, VIC

Non-stationarity in Daily Temperature Records Across Australia

Rapid warming in Australia's climate has increased the occurrence and severity of extreme heat events, affecting ecosystems, communities, and infrastructure. Common approaches based on spatial averages miss local details such as daily and locally observed temperature records, clearly pointing to a changing—non-stable—climate and highlighting differences between coastal and inland regions.

Why look at daily records?

Usually, we understand extreme weather by counting how many days surpass certain thresholds, such as temperatures above 40°C. But here, we focus on something simpler and clearer: temperature records. A temperature record occurs when the day is hotter than any previously recorded temperatures on the same day in previous years. Looking at records provides direct insight into how quickly and noticeably our climate changes—this helps us see if extreme weather is becoming a new normal rather than just occasionally unusual.

Instead of general trends, we examine detailed daily records for every day of the year at each location. This fine-scale approach matters: it shows precisely how specific areas respond differently to climate change. For example, farmers, emergency planners, and communities dealing with wildfires or heatwaves gain a clearer picture of local risks and changes.

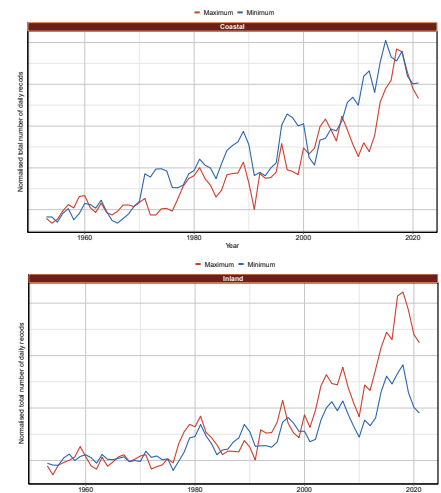
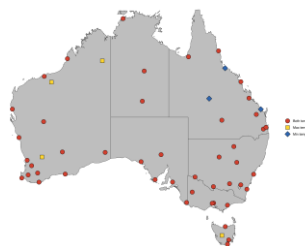
This method differs from traditional approaches, which often mask local differences. Identifying exactly when and where temperature records are increasingly set, we help communities better understand and prepare for climate impacts.

Data

We analyse daily temperature data collected from 53 high-quality Australian weather locations from 1950 to 2023. These locations, part of the Bureau of Meteorology's ACORN-SAT network and shown in the map below, are spread across the country and provide reliable long-term records.

Non-stationarity across Australia

Statistical tests show daily temperature records breaking increasingly across nearly all locations (figure below). Most points appear red, indicating non-stationarity in both maximum and minimum temperatures. Blue points highlight locations where only minimum temperatures show changes, while yellow indicates only maximum. Notably, no locations remain unaffected. This nationwide shift from historical norms means more frequent extremes and less predictable weather.



Coastal vs Inland – Different stories

Coastal areas show substantial increases in minimum temperature records, often outpacing maximum records. Inland areas experience sharper rises in maximum temperature records, increasing drought and bushfire risks. The figures above illustrate these contrasts. Understanding such differences helps target local adaptation efforts. Australia's climate is becoming more extreme, but knowing where and how extremes differ is vital for protecting communities from escalating climate impacts.



Further information

For additional information scan the QR code or contact:
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tinula.kariyawasam@student.rmit.edu.au

Firefighting stress and sleep

This study measured the impact of firefighting shifts on heart rate variability (HRV) and sleep



39

Participants

firefighters wore a wristlet monitoring device.

32

Data collection

consecutive days of monitoring.

10/14

Shift schedule

2 x 10 hours day shifts, 2 x 14 hours night shifts, and 4 days off shift.

Methodology



HRV: Measures time interval differences between consecutive heartbeats, indicating a stress response.



Sleep score: Calculated based on algorithm applied to data collected from the wearable device.



Sleep

When compared to off shift, night shift was found to be significantly associated with poorer sleep score and remained significant after adjusting for covariates.



Stress

Day shift and night shift, when compared to off shift, was significantly associated with decreased nocturnal HRV values, indicating a stress response. However, this became insignificant when adjusting for covariates.

Survey responses from all participants



Sleep

90%

Believe that firefighting shifts definitely impacted sleep.



Stress

97%

Believe firefighters are exposed to additional stressors compared to other professions.



Health

95%

Are concerned, to some degree, that firefighter stressors may affect their long-term health.



Technology

87%

Support ongoing monitoring for fatigue management.

Recommendations



Infrastructure

Improved rest and recovery facilities.



Education

Sleep health and fatigue management education.



Health

Expansion of health monitoring to include sleep screening.



Technology

Provide and educate in the use of biometric monitoring devices.



Culture

Develop a safety culture that identifies fatigue as an occupation hazard.



Researchers: Matthew Nicholson (Fire Rescue Victoria and Curtin University), HuiJun Chih (Curtin University), Ryan Mead-Hunter (Curtin University).

For more information contact:
sleephealth@frv.vic.gov.au



Rapid Intervention Teams:

A lifesaver in firefighting



Rapid Intervention Teams (RITs) are specialised groups of firefighters designated to act as standby rescuers during fire incidents. Their primary role is to monitor the situation and be ready to assist or rescue firefighters and civilians in distress.

RITs are crucial for ensuring the safety of firefighters operating in hazardous environments. They are typically composed of experienced firefighters who are trained to respond quickly and effectively to emergencies, such as rescuing trapped or injured personnel.

RAPID RESPONSE

RITs need to be prepared to deploy immediately upon receiving notification that a firefighter is in distress. This readiness and ability to act swiftly and efficiently in emergency situations, is important due to the available air a firefighter has left and the increasing risks on a fire ground.

Key components:

- Training and Drills:** firefighters undergo rigorous training and regular drills to ensure they can respond quickly and effectively. This includes the following: practising rescue operations, familiarising themselves with equipment, practising removal techniques and learning to navigate various emergency scenarios in realistic environments.
- Equipment Readiness:** All necessary equipment must be maintained in a state of readiness. This includes personal protective gear, communication devices and rescue tools. Regular checks and maintenance are crucial to ensure everything is in working order.
- Communication Systems:** Effective communication is vital for RITs. Incident controllers establish communication sectors to stay in constant contact with sector commanders & RITs. This ensures that any distress signal is immediately received and acted upon.
- Team Coordination:** Rapid response requires seamless coordination among team members. Each firefighter must know their role and be able to work together efficiently. This coordination is often achieved through pre-established protocols and continuous training.
- Mental Preparedness:** Often overlooked, firefighters must be mentally prepared to handle high-stress situations. This involves staying calm under pressure, making quick decisions and maintaining focus on the task at hand.

By ensuring these elements are in place, RITs can respond rapidly and effectively to any situation where a firefighter is in distress. This increases the likelihood of a successful rescue and minimises the risk of harm to rescuers.

SEARCH & RESCUE

This critical operation involves locating and rescuing firefighters who maybe trapped or disorientated during an emergency.

Here are some key aspects of this process:

- Advanced Search Techniques:** RITs use advanced search techniques to locate their colleagues. These techniques may include:
 - Tactical Thermology:** Thermal Imaging Cameras detect heat signatures, allowing rescuers to see through smoke and darkness to find their way through dangerous structures and locate trapped individuals.
 - Targeted Search:** Starts closest to the area of danger/concern and focuses on areas where missing firefighters were last reported or where there are clues to where they've been (e.g. following a hose line).
- Removal Techniques:** RITs use specialised techniques designed to aid in the rescue process. This techniques may include:
 - Assessment and Packaging:** RITs assess the firefighter's available air and convert the breathing apparatus into a harness.
 - Rapid Drags:** RITs utilise single, double narrow and double wide drag techniques to remove the firefighter to safety.
- Training and Preparedness:** Continuous training in techniques are essential for effective search and rescue operations. RITs practice various scenarios to hone their skills and ensure they are prepared for any situation.
- Communication and Coordination:** Effective communication and coordination are crucial. RITs must remain in contact with each other and with incident controllers to share information and updates.

By employing these advanced techniques and maintaining a high level of preparedness, RITs can effectively locate and rescue firefighters in distress, ensuring their safety and wellbeing.

FIRE SUPPRESSION

A **Mayday** is a **life-threatening emergency within an incident** and must be treated extremely seriously. The incident controller coordinates the fire ground efforts to combat fires and or other dangers, to support the desired outcome. A Mayday adds additional pressure to the incident controller by requiring the response of RITs and the coordination and formation of additional sectors.

Here are the key aspects:

- Additional Crewing:** Providing extra personnel to support firefighting operations. This may include:
 - Relief Crews:** Fresh teams to relieve exhausted firefighters, ensuring continuous and effective fire suppression.
 - Specialised Teams:** Units with specific skills, such as urban search and rescue teams or aerial firefighting crews.
- Equipment Support:** Supplying additional equipment to enhance firefighting capabilities. This includes:
 - Pumping Appliances:** Vehicles equipped with pumps, hoses and firefighting tools suited to the emergency and type of structure.
 - Aerial Apparatus:** Ladders and platforms to access high-rise buildings and difficult-to-reach areas.
- Coordination and Strategy:** Working with incident controllers to develop and implement fire suppression strategies. This involves:
 - Tactical Planning:** Identifying the methods to attack and contain the fire, considering factors like wind direction, fuel sources, etc.
 - Resource Allocation:** Ensuring that personnel and equipment are deployed where they are most needed and replaced promptly.

By providing additional crewing and equipment, fire suppression efforts can be more effective. This helps to address safety concerns and combat fires. This will improve the working environment of RITs to complete their mission.

MEDICAL AID

This involves providing immediate medical assistance to injured firefighters through **Emergency Medical Response (EMR)**.

Here are the key components:

Once a firefighter is removed, medical assistance is often necessary. RITs are trained to assess firefighters medical needs, remove heated personal protective equipment & clothing, provide EMR and stabilise the injured until they can be transported to a medical facility.

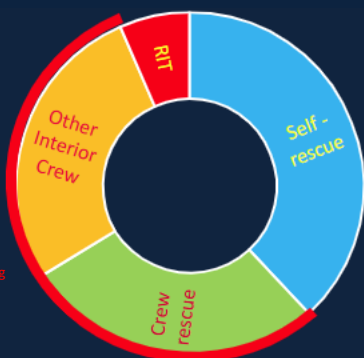
- Administering Oxygen:** Rescued firefighters often suffer from smoke inhalation which can lead to respiratory distress. Administering oxygen helps to improve breathing and oxygen levels in the blood.
- Performing CPR:** Cardiopulmonary resuscitation is a life-saving technique used when a Firefighter's heart has stopped beating. It involves chest compressions and rescue breaths to maintain circulation and oxygenation until advanced medical help arrives.
- Using Automated External Defibrillators (AEDs):** AEDs are portable devices that can diagnose and treat sudden cardiac arrest. They deliver an electric shock to the heart to restore a normal rhythm. RITs are trained to use AEDs quickly and effectively.
- First Aid and Stabilisation:** This includes treating burns, fractures and other injuries. RITs are trained to provide initial care to stabilise the injured until they can be transported to a medical facility.
- Continuous Training:** Regular EMR training ensures that firefighters are up-to-date with the latest medical techniques and protocols. This training includes simulations and practical exercises to maintain proficiency, supporting positive outcomes.

By providing immediate and effective EMR, firefighters can significantly improve the chances of survival and recovery for their injured colleagues.

WHO IMPLEMENTS THE MAYDAY RESECUE

**Initial
RIT**

(firefighters operating
inside the structure)



* www.Firefightermaydayproject.com

Download
Poster



Contact
LFF Steven Kaiser



Rural Respiratory Protection

A modern approach to a historic health problem

Health Hazards



90% OF HAZARDOUS MATERIAL exposure enters the body via inhalation



Vegetation produces known **CLASS 1 CARCINOGENS**



LARGE VOLUMES of ultra-fine particulate matters



CARBON MONOXIDE EXPOSURE linked to Parkinson's and Motor Neurone Disease

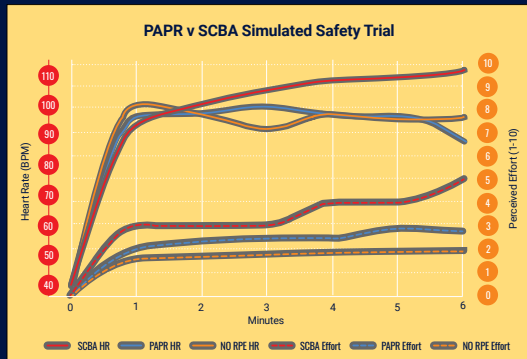


Air toxics target **SPECIFIC ORGANS CUMULATIVELY**



Holistically firefighters are likely **66% OVER SAFE EXPOSURE LIMITS**

Research and Trials



In the last **FIVE YEARS** there has been a **385% INCREASE** in wildland firefighter health studies compared to the 1990s and early 2000s

In 2020, the Rural Respiratory Protection Working Group (RRP WG) conducted a comprehensive literature review to find an optimal solution to this increasing health risk

After finding that a Powered-Air Puring Respirator (PAPR) would be the best fit, the RRP WG conducted a safety test looking at physical impacts of PAPR vs SCBA (Self-Contained Breathing Apparatus) (see graph)

Project Timeline



Urgent Need for Action

- **Urban development** and climate change driving increased risk
- **9% increase in cancer diagnosis** for wildland firefighters
- **14% increase in cancer-related deaths** for wildland firefighters
- **73% of firefighters develop complications** due to smoke inhalation
- Female firefighters at risk of **reproductive cancers**

The Solution



The Benefits

- Significant health benefits, including a reduction in symptoms post-fire
- Improved visibility and communication
- Increased wearer compliance
- Lightweight and low effort provides long-duration operation (at least four hours)
- Visual and audible alarms
- A 9900% increase in Minimum Required Protection Factor (MRPF) compared to disposable P2 masks

Our partners

WFFCCS Wildland Firefighter Cancer Cohort Study | University of Arizona
FEMA Federal Emergency Management Agency US | Forest Fire Management Victoria

Contact

respiratorwg@frv.vic.gov.au

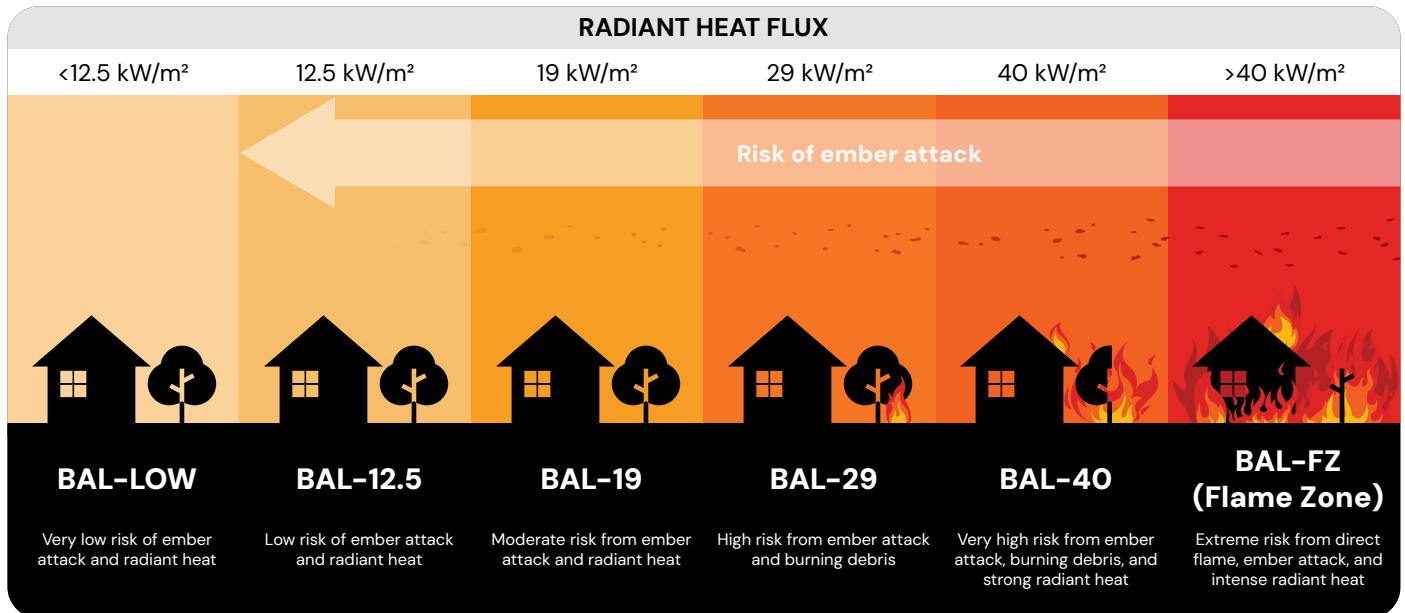
Watch our latest update >



Bushfire Resilience from the Ground Up

Bushfire Attack Level (BAL) Insights – Geoscape Australia

Bushfires are intensifying across Australia. BAL Insights replaces regional averages with **building-level exposure**—revealing the true risk at every address.



→ Bushfire Risk Drivers

- Hotter, drier conditions and more extreme weather
- Higher fuel loads and fewer safe windows for hazard reduction
- Increased lightning ignitions
- Expanding development into bushfire-prone areas
- Steeper slopes accelerating fire spread

→ What is BAL?

- Identifies the potential risk of a building being impacted by a bushfire
- Includes potential ember attack, radiant heat, and direct flame contact
- Defined in AS 3959-2018
- Guides building design and planning

→ BAL Insights from Geospatial Data

- Maps each building's footprint, height, and roof characteristics
- Overlays vegetation type & proximity, slope, and Fire Danger Index
- Auto-generates site-specific BAL ratings in minutes
- Highlights setback and ember zones for clear action and pricing

→ Use BAL Insights to

- Target high-risk blocks for fuel reduction and resilient builds
- Focus emergency and infrastructure spending where risk is greatest
- Price insurance and loans to true risk
- Coordinate residents, services and insurers for safer communities



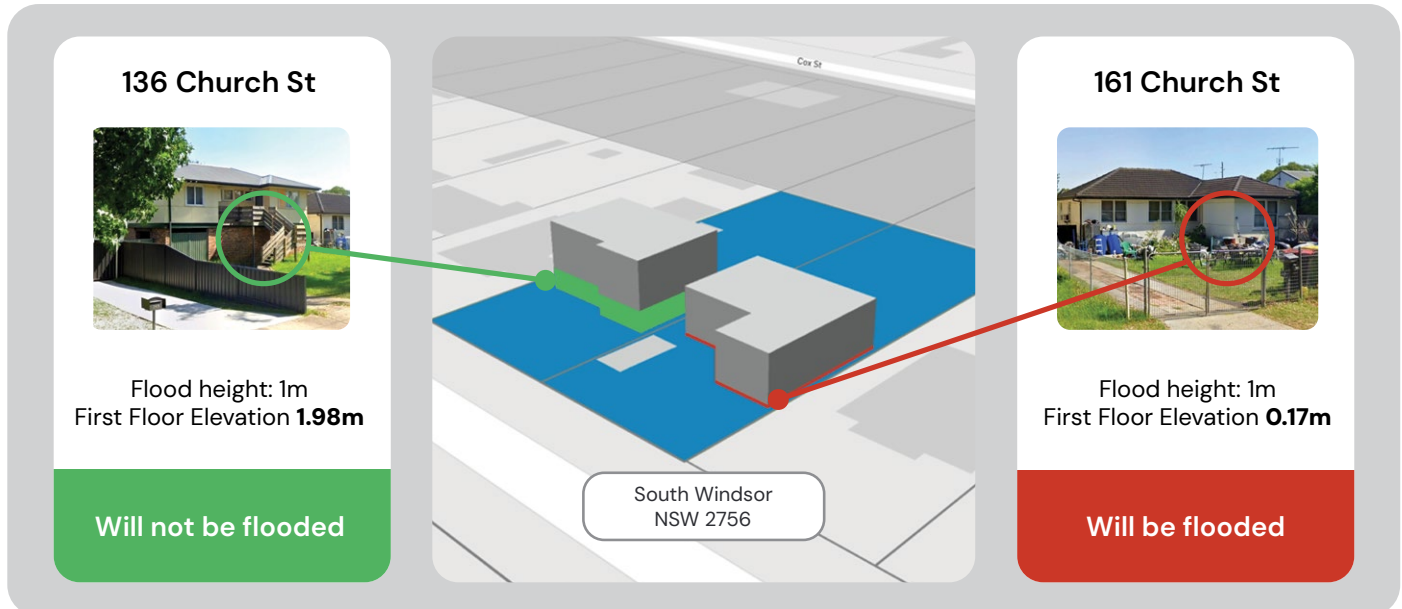
Turn bushfire risk into resilience.

Contact Geoscape about integrating BAL Insights into your solutions.

Location Intelligence for Flood Resilience

First Floor Elevation (FFE) – Geoscape Australia

Floods are among Australia's most frequent and costly disasters. Average postcode data masks true exposure. **FFE pinpoints the real flood risk at every address.**



→ What is FFE?

- Height of the lowest habitable floor above ground
- Captured from high-resolution street-level imagery
- Flags garages and basements in urban areas
- Seamlessly linked with Geoscape Buildings and G-NAF
- De-averages flood models with building-specific data for sharper flood-risk insights

→ What the dataset provides

- **First-floor height** above ground, in metres
- **Basement flag** – yes / no
- **Garage flag** – yes / no
- **Confidence score** to filter by reliability
- **G-NAF link** for trusted address matching
- **File formats** ready for any flood model

→ Key benefits

- Sharper disaster response and resource deployment
- More accurate insurance pricing and reinsurance modelling
- Faster, evidence-based lending and portfolio screening
- Better-informed planning and engineering decisions

→ Use cases

- **Insurance** – price policies to real risk
- **Finance** – assess elevation before lending
- **Government** – target resilience and response
- **Logistics & planning** – design sites with flood resilience



Enhance your flood risk assessment.

Contact Geoscape to integrate FFE into your analytics.

AFDRS FISl – Fire Ignition, Suppression, and Impact



IGNITION

- Flammability Index (gridded)
- Real-time lightning strikes (point locations)
- Thunderstorm activity level (gridded)



SUPPRESSION

- Suppression Index (gridded)
- Response time data (gridded)
- Identify areas of higher risk



IMPACT

- Valued asset locations (gridded)
- Impact Index (gridded)
- Minutes to 5 ha

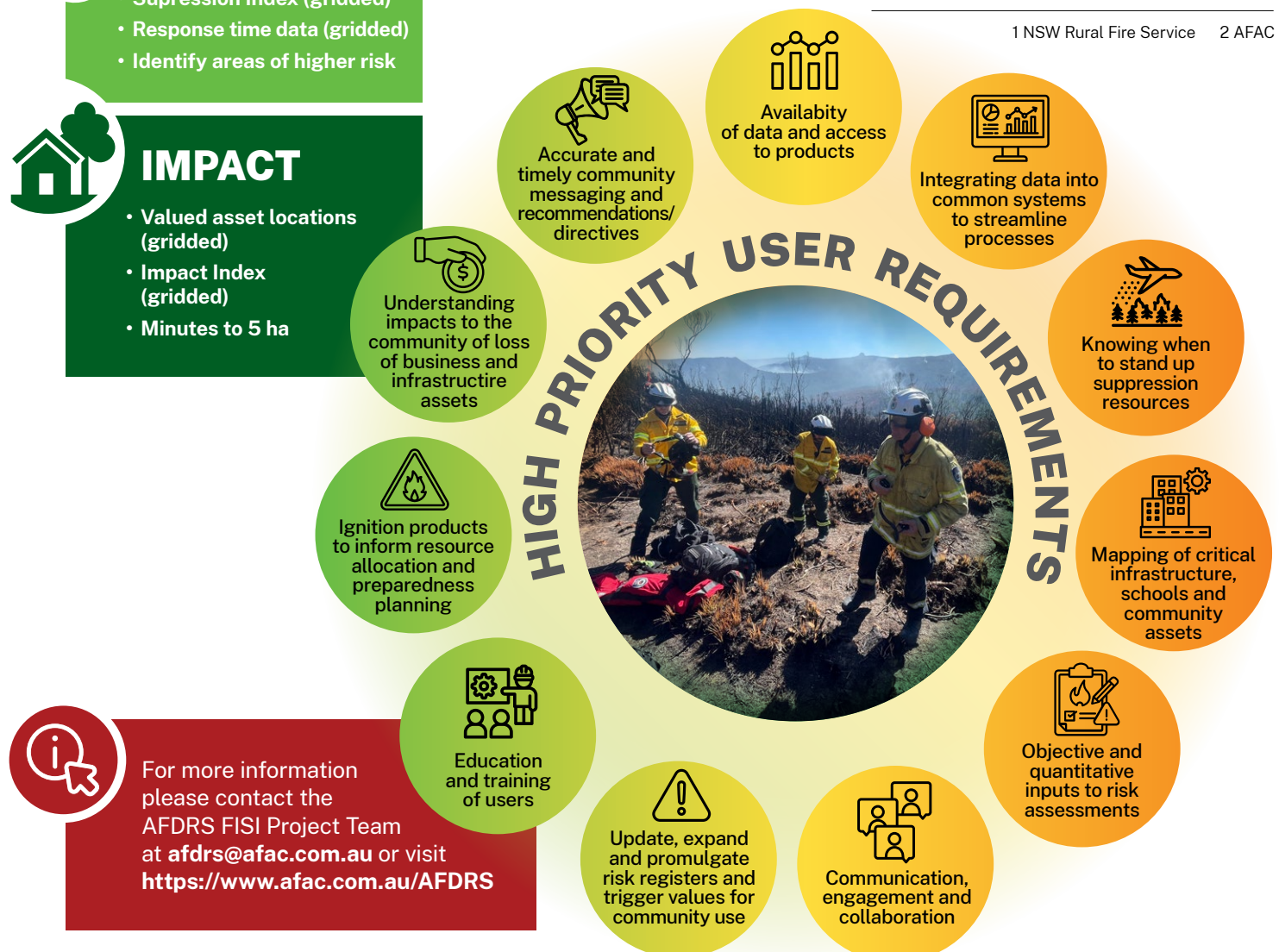
Dr Meaghan Jenkins¹ and Owen Ziebell²

The Fire Ignition, Suppression, and Impact Indices (FISI) are the biggest step forward in the Australian Fire Danger Rating System (AFDRS) since its launch in September 2022. FISI extends the AFDRS capability by providing targeted information on how easily fires may start, how hard they'll be to suppress, and the potential impact.

High priority products have been shaped through extensive engagement including in-person workshops in every state and territory and online webinars with over 400 stakeholders and subject matter experts.

FISI is being developed to support operational staff in making informed decisions. These products are intended to complement the professional judgment and on-ground experience of fire and land managers, particularly in diverse and complex situations.

1 NSW Rural Fire Service 2 AFAC





Supporting the personal impact of frontline disaster response on Australia's first responders

Author: Michael Willing APM, CEO, Fortem Australia

Australia's first responders are the cornerstone of our nation's disaster response, answering the call – often at immense personal cost – to protect communities in times of crisis. But these extraordinary humans face their own challenges. As natural disasters become more frequent and severe, the men and women who make up this vital frontline workforce are increasingly pushed to their limits, experiencing rising levels of exhaustion, burnout, and psychological distress.



1 in 3 first responders, both paid and volunteer, experience high psychological distress. When compared to the general adult population, they face higher rates of:

- mental health diagnoses
- PTSD
- suicidal thinking and planning.



Families are also affected by their loved one's work and mental health issues.

Meanwhile, our paid and volunteer agencies face increasing challenges around resourcing, recruitment and retention. These workforce shortages places additional operational pressure on the remaining first responders, who are already managing extended deployments, highly complex disaster conditions, and frequent exposure to traumatic events. This also places an increased burden on leaders to not only ensure the wellbeing of their workforce, but their own resilience as well.



The need for independent early intervention and preventative mental health practices

- ➔ First responders face trauma during both disasters and routine duties.
- ➔ While agencies provide support, many first responders are reluctant to use internal services.
- ➔ While many first responders recognise trauma in others, they often don't recognise their own distress.
- ➔ Cost and waiting times are barriers to seeking private support, while there may be a sense that general community services may not fully understand the nature of the challenges of first responder work.

Early intervention plays an important role in reducing the impact of mental health issues on both organisations and individuals as well as their families. Early intervention helps to:

- improve diagnosis and treatment
- prevent or reduce the progress of a mental illness
- improve confidence in support services available, and therefore engagement
- build tools for individual resilience and wellbeing
- improve retention of staff and valuable knowledge, skills and abilities.



Fortem's impact

Since 2019 Fortem has:



supported over **20,000** individual first responders and family members



hosted **3,800** social connection wellbeing activities



provided career management services to **1,800** first responders



opened a dedicated **wellbeing hub** in WA for first responders and their families



held **9,000** psychological and counselling sessions



expanded its outreach program to support more first responders and their families in **regional and remote Australia**.



More than just nice to have: why is social connection important?

The research is clear that there are measurable and strong benefits to programs that are preventative and that include socially connecting activities. These programs play a crucial role in supporting the wellbeing of individuals across Australia, particularly first responders and volunteer groups in regional and remote areas.

Social connection activities benefit first responders and their families by working towards reducing stigma of mental health issues, connecting communities – even in remote and rural areas, increasing opportunities to understand and access services

available, and offer opportunities for first responders to recognise and respond to early warning signs of mental ill health. They can also be pivotal in preventing suicide and bolstering levels of resilience.

An emerging concept, social prescribing, a healthcare approach that enables professionals like GPs, nurses and social workers to refer individuals to non-medical, community-based services aimed at enhancing health and wellbeing, further acknowledges that factors like loneliness, stress and financial difficulties significantly impact health, and these challenges often cannot be addressed through medication or psychological interventions alone.

Connection activities plus mental health literacy is a key formula in the success of Fortem Australia.

89% of respondents felt that the activity they participated in benefited their health and wellbeing.

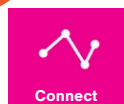
93% of respondents reported the wellbeing activity they attended improved their awareness of their own mental health and wellbeing.

64% of respondents felt that the activity they participated in strengthened their social network.



5 Ways to Wellbeing

All Fortem activities are underpinned by the 5 Ways to Wellbeing framework, delivered in collaboration with the Royal Melbourne Hospital.



Connect

Connection is why we are here. It is what gives us purpose and meaning in our lives.



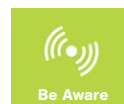
Be Active

Being active is important for good health to help keep your mind and body working well.



Keep Learning

Trying new things will make you more confident and give you a sense of achievement.



Be Aware

Finding time to notice how you are, what is right with yourself and your life, can boost wellbeing.



Help Others

Even the smallest act can make you happier, whether it's a smile, a "thank you" or a kind word.



Conclusion

As more responsibilities for disaster resilience fall on fewer individuals, the risk of burnout, psychological distress, and physical exhaustion increases, further threatening the resilience of our national disaster response framework. Ensuring the wellbeing and retention of these critical responders has never been more urgent.

Addressing these complex needs requires an integrated approach that includes proactive mental health support, community engagement, and career transition resources, ensuring frontline responders remain resilient and committed.

Early intervention and preventative mental health practices delivered by independent organisations provide low-threat support systems that encourage our first responders to seek assistance before it's too late, while also supporting the family unit. This helps to strengthen the wellbeing and resilience of our first responders, therefore strengthening the resilience and capability of those agencies to better respond to natural disasters.



Fortem

fortemaustralia.org.au

Sources

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Dash, S., McNamara, S., de Courten, M., & Calder, R. (2023). *Social prescribing for suicide prevention: Policy Evidence Brief*.
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Strategic Fire Service Management of a Global Sporting Event



The Formula 1® Australian Grand Prix event is held annually at Albert Park, Melbourne in front of more than 450,000 spectators (and millions of viewers worldwide) across four action-packed days.

Fire Rescue Victoria (FRV) is the lead agency for fire safety and emergency preparedness and response for the event. FRV works in partnership with other emergency service agencies and the event organisers to ensure effective emergency response capability that maintains public safety without disrupting this high-profile international event.

Pre-event Challenges

- Long lead time (four months) required to plan and prepare for the event.
- Securing equipment, appliances and personnel for the event without compromising FRV's business as usual operations requires coordination with numerous departments.
- FRV's event coordinator requires strong knowledge of the event to develop a comprehensive event plan and manage resources and operations during the event.
- Short bump in and out periods, with most stakeholders attempting to access and set up/pack down simultaneously.
- All vehicles and infrastructure must be brought in before the event starts and remain for the duration due to five-day event lockdown period.
- Large amount of dangerous goods requiring significant planning and resources.
- Limited opportunities for site familiarisation due to tight event security.

Race Weekend

FRV DAILY RESOURCES

- 3 fire trucks
- 30+ operational, command and logistic personnels
- 6 command, logistics and response buggies
- 2 portable pumps

FRV TRUCKS

TUNNELS

EMERGENCY COORDINATION CENTRE

CHALLENGES

- Slow or restricted movement when responding to incidents due to temporary infrastructure, strict security measures, site layout, large crowds, race track and lake
- The temporary infrastructure limits access to water (sprinklers and few fire hydrants) for firefighting and fire suppression
- Aerial displays and helicopter transport have the potential for a mass casualty incident
- Unique emergency response dispatch protocols for the event
- Logistical challenges in transporting crews to the event and around the site
- Numerous uncontrollable variables and potential hazards due to event being temporary and outdoors
- FRV doesn't have access to or jurisdiction over the entire site – safety in some areas is the responsibility of other stakeholders
- FRV PORTABLE PUMPS
- LAKE PONTOONS
- Paddock Club and Pit Building
- DANGEROUS GOODS/HAZARDOUS MATERIALS
- HELICOPTER LANDING ZONE
- EMERGENCY SERVICES COMPOUND

Keys to Success:

Comprehensive Planning and Proactive Stakeholder Engagement

External Activities

- Early engagement with the Australian Grand Prix Corporation and emergency service agencies

- Clarify stakeholder roles and responsibilities

- Interagency collaboration to prepare for site-specific risks

- Interagency collaboration to respond to incidents and emergencies

- Debrief with event staff

PRE-PLANNING November - March

EVENT DELIVERY March

DEBRIEF AND REVIEW March - April

Internal Activities

- Appoint planning and coordination team

- Develop comprehensive event plan

- Coordinate resource and equipment allocation

- Familiarise event staff with site, roles and responsibilities, and unique emergency response protocols

- Flexible and adaptive event logistics

- Debrief with FRV event staff

- Review with planning and coordination team to capture lessons learned and recommendations for improvement

Planning effectively and communicating openly and often with all relevant stakeholders will ensure timely and effective emergency management while maintaining a low profile so as not to disrupt a high-profile event with a global audience of millions of people. The application of these insights can improve planning and response efficiency for similarly complex events.



Download the poster and presenter details here

THE PROBLEM

Mass gathering events, especially large scale music festivals in remote rural locations have the potential to adversely impact communities, patrons, responder agencies and municipalities. Large scale events that are not well managed or executed have proven to have had negative impacts on communities and caused harm to patrons, volunteers and staff.

Conversely, well governed and managed events satisfy patron needs and bring economic benefit to communities.

THE IMPACT

Mass gathering events have realised potential to impact on adjacent communities.

- The single mobile phone cell that is overloaded by festival patrols means community members cannot reliably call 000 or receive emergency warnings and advice
- Local health service resources that can be over burdened if festival medical resources are not sufficient
- The potential for an emergency on the festival site to spread to adjacent communities, such as major bushfires
- Negative impacts on small communities due to surge in transient visitor population
- Challenges for small rural municipalities to manage statutory planning requirements for complex events and often at short timeframes
- Festivals that are cancelled or abruptly terminated due to event management failures

WHAT TO CONSIDER

- Value of relationships between the EM sector, municipalities and event organisers before, during and after events
- Event organisers with EM knowledge as part of their management teams (This enables the development and approval of actionable EM plans and an open and authentic conversation about risks)
- Provision of critical infrastructure at festival sites for patrons, staff and event volunteers to ensure connection at the site and minimise the impact on surrounding communities
- Partnership between event organisers and telecommunication providers to place a mobile base station onsite despite complexity and remoteness of the site
- Local weather monitoring and forecasting with informed triggers to modify staff and patron activity
- Heat health considerations in stage design and sustainable infrastructure for shade and cooling

WHAT DOES GOOD LOOK LIKE

- Strong governance structures consistent with municipal, regional and state emergency management arrangements
- Authentic relationships between event organisers, emergency services and local government
- Risk focused plans that are reviewed, approved and tested
- Pre-determined triggers for event modification that encompass all potential emergency risks to avoid cancellation wherever practicable



**Ambulance
Victoria**

Brett Boatman
Deputy Chief Officer
CFA

Paul Burton
Emergency Management Planning
Coordinator **Ambulance Victoria**

YOUR DATA IS ONLY AS GOOD AS WHAT YOU DO WITH IT

LEVERAGING FIRE DANGER AND FIRE SEASON DATA TO SHIFT BEHAVIOURS

- 2019** Fire Danger information is accessed through the 'half grapefruit' physical roadside sign or via the National Institute of Water and Atmospheric Research (NIWA) Fire Weather website.
- 2020** Can I light a fire? Tool goes live on checkitsalright.nz, bringing together Fire Danger data and Fire Season data for the first time to answer our website's most searched question "can I light a fire?".
- 2021** Live Fire Danger information is available via the MetService Website (metservice.com) and MetService NZ Weather App. MetService is Aotearoa New Zealand's weather authority.
- 2022** The Fire Danger API is connected to programmatic display of channels, Facebook, Instagram and paid search triggered by location and fire danger rating - an Aotearoa New Zealand media first.
- 2023** TVNZ One News at 6pm starts reporting on Fire Danger as part of its weather forecast. 3.82 million devices that have downloaded the MetService NZ Weather App can now opt in to get a warning on their phone when the local Fire Danger is "Extreme" near their home or current location.
- 2024** People in Aotearoa New Zealand can now view all safety requirements and tips to avoid a fire getting out of control in three steps using the 'Can I light a fire?' Tool on checkitsalright.nz.
- 2025** Display advertising messaging matrix is updated to reflect the Fire Season as well as Fire Danger.



OUR MISSION

Make Aotearoa New Zealand safer by helping people better understand the risks of wildfire and to take the right actions to prevent an unwanted outdoor fire through improving the way Fire and Emergency New Zealand use Fire Danger data.

This was broken down into three key actions:

- 1 Develop a simple online tool that brings together Fire Danger data and Fire Season data to answer the most searched question "can I light a fire?".
- 2 Find ways for Fire Danger to be included as part of the weather forecast on Aotearoa New Zealand's mass channels, in the same way they report on the forecast for rain and wind.
- 3 Take the iconic 'half grapefruit' Fire Danger sign into many digital environments and push live local Fire Danger information to people when the risk is higher.

AOTEAROA NEW ZEALAND STATISTICS

Over **43,000** wildfires ravage 7,300 hectares of land each year.

Wildfire incidents have risen **40%** over the last 40 years.

97% of wildfires are caused by people.

THE INNOVATION

Our vision was to keep wildfire risk top of mind for New Zealanders and foreign visitors by integrating Fire and Emergency's data to make Fire Danger and Fire Season information part of the weather.

In the same way someone habitually looks at the forecast before going on a hike or sailing, everyone in Aotearoa New Zealand would look at the Fire Danger forecast before lighting a fire, or doing anything that could generate heat or sparks outdoors.

This could be delivered by serving Fire Danger data and Fire Season data via a public application programming interface (API). The creation of the APIs was a fundamental enabler to get the data 'plugged in' to various digital channels to serve credible, accurate and reliable information to the public.

Since 2022, this has enabled us to trigger notifications and advertising, and continually improve our 'Can I light a fire?' Tool.

KEY OUTCOMES

In short, it's working.

More people are checking the Fire Danger and Fire Season each wildfire season before lighting a fire or doing anything that could generate heat or sparks outside and messaging can be triggered locally when the Fire Danger hits "High" or above on more platforms than ever - many a first for advertising platforms in Aotearoa New Zealand.

We measure this using user behaviour data and a nationally representative survey among 500 people every month of the year. The metrics have so far exceeded the targets set in 2024.

90% of survey respondents reported they assess the local Fire Danger before lighting an outdoor fire (surpassing a target of 75%).

5% of the Aotearoa New Zealand population were using the 'Can I light a fire?' Tool on checkitsalright.nz.



As at the end of May 2025 we have recorded a total of **142,763** people signing up to receive a warning notification on their phone from the MetService NZ Weather App when the Fire Danger is "Extreme" near their location.



Find out more



SAMANTHA STEWART Senior Advisor Digital Marketing

Web strategist and digital advisor with a passion for creating impactful and engaging digital experiences.

Samantha.Stewart@fireandemergency.nz



FIGHTING THE ENEMY YOU CAN'T SEE

“

OUR PGM'S DETECTED CO AND H₂S IN WHAT APPEARED TO BE A NON-THREATENING ENVIRONMENT.

Senior Station Officer
Built Environment

BUILT ENVIRONMENT

Frontline experiences: Responding to a medical call (unresponsive patient) with an ambulance in attendance, Personal Gas Monitors alarmed for CO as soon as crews entered the room. Upon further investigation the Officer found a tin of hot embers behind the door that the patient had been using for warmth. This enabled potential CO poisoning information to be passed to health providers via the ambulance crew.

PERSONAL GAS
MONITORS

NATURAL ENVIRONMENT

“

HIGH ALARMS MADE US REASSESS AND MOVE UPWIND.

Volunteer Firefighters
Natural Environment

Frontline experiences: Firefighters working to extinguish wildfires can be inadvertently exposed to toxic gas while working in seemingly less threatening situations, such as digging out hot spots and operating pumps and chainsaws.

LESSONS FROM DEPLOYING PERSONAL GAS MONITORS TO OUR FRONTLINE

Fire and Emergency New Zealand's Gas Detection Project monitored firefighters' exposure to toxic gases and flammability limits since the end of 2023. The deployment of Personal Gas Monitors (PGMs) across 51 of our busiest stations nationwide, and discovery at two long-duration wildfire events, enabled real-time monitoring. Our findings led to the implementation of the capability at additional stations and provide a case study for other fire authorities, offering valuable insights to address hidden risks from toxic and flammable gases to frontline personnel, and to help us work together to be safer, smarter, and more connected.

WHAT WE DID

An Occupational Hygienist conducted firefighter behaviour and exposure studies in the **built environment** and in the **natural environment**. The goal was to monitor real-time exposure to hazardous gases during typical response activities.

- **Built Environment:** Monitored exposure to **carbon monoxide (CO)**, **hydrogen cyanide (HCN)**, **hydrogen sulphide (H₂S)**, **oxygen (O₂)**, and **Lower Explosive Limit (LEL)** using *Ventis Pro5* personal gas monitors.
- **Natural Environment:** Monitored **carbon monoxide (CO)** exposure using *Tango TX1* personal gas monitors during wildfire events

METHODS

Usage Protocols:

- **Built Environment:** Personnel activated and wore monitors during incident response or training. Devices were left at entry control when starting up in Breathing Apparatus (BA).
- **Natural Environment:** Devices were worn for the entire shift by firefighters, pump operators, chainsaw operators, machinery operators, helicopter pilots, and drone operators during wildfire incidents.

Data Analysis:

- Exposure data was downloaded and analysed against the relevant Workplace Exposure Standards including the eight-hour time weighted average (adjusted for shift length), short term exposure limits and ceiling limits.
- Observational data was collected by an on-site Occupational Hygienist during incidents.
- A rating of risk (low, medium, high) was determined using the criteria in the Australian Institute of Occupational Hygiene's (AIOH) *Simplified Occupational Hygiene Risk Management Strategies 2nd Ed.* 2023

KEY FINDINGS

1 Built Environment Exposure:

Personnel were exposed to IDLH (**Immediately Dangerous to Life or Health**) levels of gases—particularly CO, HCN, and H₂S—across various roles, including officers in charge. Short, high exposures were associated with structural fires, hazardous materials incidents, and confined space rescue. Based on the exposure results, the risk was high for firefighters and officers.

2 Natural Environment Exposure:

Personnel experienced **CO exposures exceeding short term and ceiling limit exposure standards** during wildfire operations. While eight-hour average exposures indicated chronic risk is low, short-term high exposures exceeding exposure limits were observed, especially during overhaul operations and when operating small motors eg. pumps and chainsaws. The risk during overhaul varied from medium to high. While operating small motors, the likelihood of acute exposure is considered likely and the risk considered very high.

3 Health Risk Insights:

- **Built Environment:** Acute exposure across CO, HCN and H₂S gases is the primary risk.
- **Natural Environment:** Acute CO exposure during wildfires presents a significant risk.

FUTURE CAPABILITY ROLLOUT

Following these findings, we have expanded personal gas monitoring capability to **38 additional fire stations and the National Training Centre by 30 June 2025 within the built environment**.

For the **natural environment**, a separate report is in development to guide future placement and integration of personal gas monitoring into wildfire response protocols.

Smoke and Resilience: Evaluating Health Impacts and Collaborative Solutions for Firefighters

Dwan Vilcins¹, Tamara Blake¹, Fisher Wang², Paul Robinson¹, Fay Johnston³, Peter D Sly¹

¹Child Health Research Centre, The University of Queensland, ²Queensland Alliance of Environmental Health Sciences, The University of Queensland, ³Menzies Institute for Medical Research, University of Tasmania

Background

Firefighters exposed to bushfire smoke face potential health risks, including lung function decline. Oxidative stress potentially drives some of the adverse effects, and understanding the mechanisms improves our ability to intervene.

Challenges to the correct implementation of personal protective equipment are a reality for wildland firefighters, and there is limited evidence for other health-supportive behaviours.

Our study assesses the acute health effects of smoke exposure on firefighters and the effectiveness of current protective measures.

The EMBER study

The Environmental Measures of Bushfire smoke Exposure and Respiratory health study (EMBER) is a multifactorial assessment of bushfire smoke exposure and the relationship with health outcomes for firefighters and households.

EMBER combines environmental assessment, exposure assessment and health assessment, with the aim of protecting the health of communities during bushfire smoke events.

We currently have 31 participants enrolled (26% female) across 8 burn sites with many firefighters participating in more than one burn during the study period. Ages range from 27-60 years, with the average age 43 years).

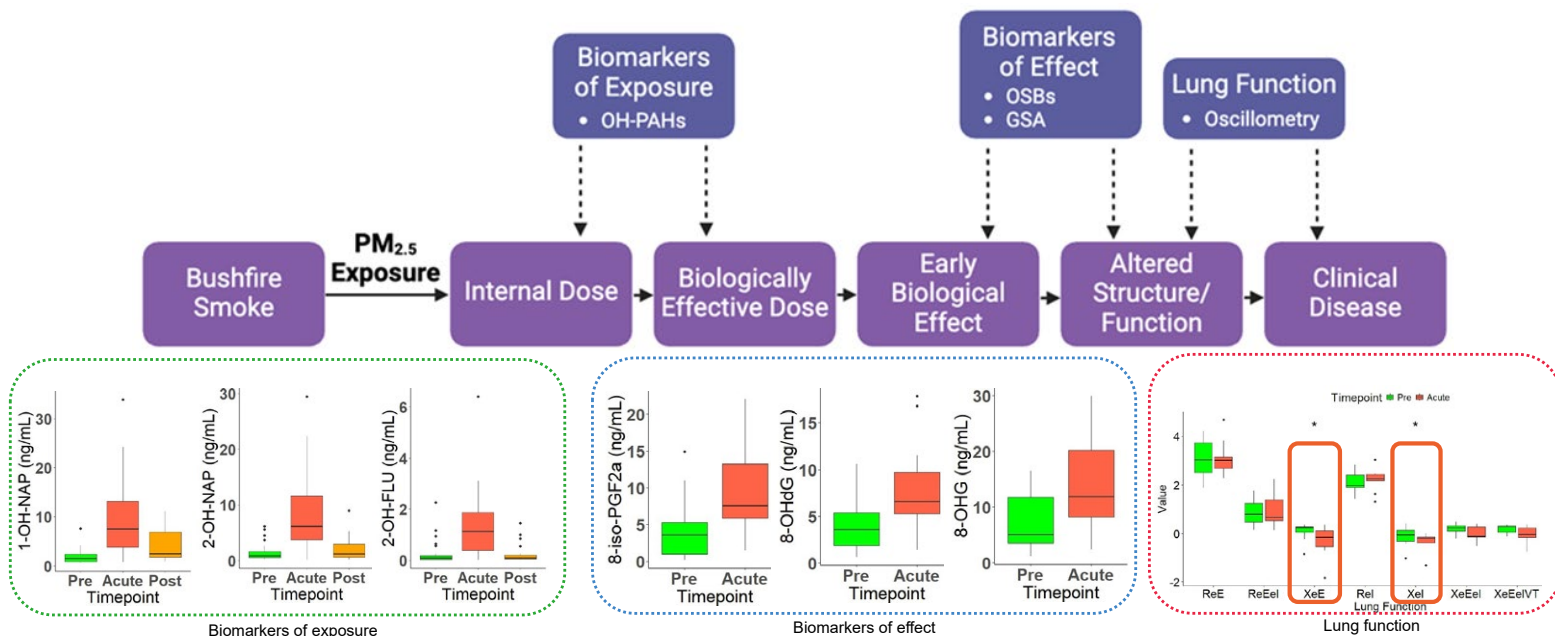


A day in the life of an EMBER firefighter

1. **Chat** with study staff and sign consent form to be involved
2. **BEFORE** shift: urine sample, lung function test, medication check
3. **AFTER** shift: urine sample, lung function test, medication check, symptom screening
4. **AT HOME**: short online survey collecting relevant health info
5. **2 WEEKS** no burn jobs: urine sample, lung function test, medication check, symptom screening

What are we finding?

Results



Co-designing solutions

In addition to our health study, this study aims to co-design interventions with firefighters to improve their health outcomes, by identifying and addressing barriers to effective protection and exploring additional health recommendations. We have begun conducting a semi-qualitative survey using the Health Belief Model to ascertain the knowledge, barriers and preferences for a range of health protective behaviours, which will feed into a co-design workshop to develop a future intervention study.



Scan to learn more about EMBER, sign up for the study or sign up for the newsletter

Acknowledgements

We would like to thank all the firefighters involved in our study and those supporting the work. We thank the National Health and Medical Research Council who funded EMBER through an Ideas grant and the Centre for Safe Air for funding the co-design arm. We thank the EMBER study team for their hard work delivering the study

BE PREPARED NOT SCARED

Held each September, 30Days30WaysAUS delivers daily tips, challenges, and activities to help South Australians Get Ready for fires, floods, storms, heatwaves, power outages, and more.



Too many South Australians feel overwhelmed, underprepared, or unsure of what to do in an emergency.

30Days30WaysAUS turns preparedness into simple, daily actions, helping people build confidence and take control.

It helps people move from feeling unsure and reactive to feeling confident and prepared.



30Days30WaysAUS.org.au
@30Days30WaysAUS

82,545

26

Facebook Views

Campaign Partners

12,412

125

Instagram Views

Posts and Reels

Our campaign partners contributed content and shared campaign messaging through their own social media channels, broadening the campaign's reach, boosting brand visibility, and helping grow an engaged and informed audience.

This campaign is for everyone.

Whether you're in the city, the suburbs or regions, 30Days30WaysAUS gives all South Australians the tools to Get Ready – one day, one action at a time.



Government of South Australia
South Australian Fire and
Emergency Services Commission

State Recovery | Strategic Communications

Recovery communications with
Aboriginal and remote communities

The challenges, insights and learnings from the Kimberley Floods recovery

Complex communication needs

When record-breaking floods devastated the West Kimberley region in January 2023, the communication challenges that emerged were as complex as the disaster itself.

Eleven communities across the vast Fitzroy River catchment found themselves cut off - not just by floodwaters, but by the breakdown of communication networks that had previously connected the Valley.

The aftermath revealed a perfect storm of communication barriers. Remote locations spanning hundreds of kilometres; traumatised and displaced people; pre-existing community challenges; multiple language groups; and cultural sensitivities created an environment that required bespoke communications.

Traditional communication approaches designed for urban populations with reliable channels could not address the unique realities of this remote, culturally diverse region. It was clear following the floods that failure to communicate effectively would compound the disaster's impact.

Guided by five key principles, the DFES State Recovery Communications Team adopted a culturally sensitive, adaptive, and nimble approach to recovery communications. Through deep engagement and sustained collaboration with key communication stakeholders, they ensured that vital recovery messages and information were effectively delivered to impacted communities.

Recovery Communications Principles

Accessible

Ensure that critical recovery information is delivered to impacted individuals through a variety of easily accessible communication channels

Relevant

Share recovery information through formats and stories that resonate with community experiences and reflect their lived realities

Inclusive

Create communication materials that can be understood and engaged with by all community members, regardless of their background or abilities

Respectful

Respect cultural sensitivities and seek appropriate community approvals to undertake communication activities On Country

Transparent

Provide honest, timely, and complete information about recovery progress, including challenges and setbacks, to build community trust



Learn more

Find out how each of these recovery communications principles were applied in Kimberley Floods recovery communications by scanning this QR code.

What we've learnt



Early cultural engagement is critical

Partnering with Aboriginal community leaders from day one ensures communications are effective and culturally appropriate



Adaptive approach to communications

Regular review and adjustment of communications strategies based on community feedback and changing needs delivers better outcomes



Relationships matter

Building trust through ongoing engagement and collaboration with partner agencies and community representatives forms the foundation of successful recovery communications



Proven toolkit ready for deployment

Tested tools and strategies specifically designed for Aboriginal and remote communities are now available for future recovery efforts



Community champions first

Early engagement with culturally knowledgeable local leaders will ensure future communications are culturally appropriate and reflect the community's needs



Measure what matters

Measure communication effectiveness by assessing community understanding and sentiment - not just message reach

Looking Back to Move Forward: The Path to AI-Enabled Outcomes

The Reality Check

AI is often expected to be embedded in new technology, but in the emergency services sector, its practical application remains a challenge. AI is not a silver bullet — and **not everything can or should be automated today**. But agencies must start preparing now to avoid being left behind.

Fire seasons are unpredictable, and without structured, quality data, the timeline for AI development could be significantly delayed. The time to start laying the groundwork for AI is now.

Understanding AI: The Fundamentals

Artificial Intelligence enables computers to perform tasks that typically require human intelligence - like recognising patterns, making predictions, and optimising decisions.

Machine Learning is a subset of AI where algorithms learn from data to make predictions or decisions without being explicitly programmed for every scenario.

Data Engineering is the foundation - collecting, cleaning, and organising data so it's ready for analysis and AI applications.

Start with Data, Not AI

Before agencies can fully harness AI's potential, they must first lay a strong foundation. Data analysis and data science offer significant value right now as a parallel line of effort alongside AI preparation. By leveraging historical event data, agencies can gain crucial insights into incident causes, correlations, and outcomes—capabilities that drive immediate improvements in operational efficiency while AI capabilities evolve.

This connects directly with data engineering—the foundation work of collecting, cleaning, and organising data. Strong data engineering practices not only enable better data science today but also create the structured datasets that AI will eventually need.

The real value lies in defining success upfront. One of AI's key benefits is its ability to automate the replication of successful outcomes. Agencies need clear benchmarks for effective incident response—whether it's timeliness, resource utilisation, or strategic alignment.

To train AI effectively, you typically need:

- **Historical event data** (ignitions, weather, outcomes)
- **Labelled examples** (helpful for supervised learning—what "good" looks like and what doesn't)
- **Sensor and operational data** (satellite, aircraft, crew logs)
- **Clear objectives** (what are we trying to optimise?)

Without this foundation, AI will be slow, ineffective — or worse, misleading.

Three Ways to Leverage AI



Automate Routine Tasks

Use AI to extract data, transcribe communications, and classify imagery - cutting down time on manual work.



Enhance Decision-Making

Uncover patterns, assess risk, and recommend optimal resource use based on real-time and historical data.



Enable Real-Time Intelligence

Predict fire spread, detect ignitions, and forecast staging needs as conditions evolve.

Essential Steps to Start Now

1. **Assess Current Data Practices:** Identify gaps and inconsistencies in how data is captured and recorded.
2. **Establish Governance & Standards:** Standardise data formats and assign responsibility for data quality.
3. **Define Success Metrics:** Clarify what effective response looks like to give AI meaningful targets.
4. **Design for Scalability:** Build flexible systems that can grow with new data and technologies.

Advanced AI Strategies: Build for the Future

As agencies invest in new sensors and data streams, AI models must evolve with them. Two powerful strategies can help:

Transfer Learning: Reuse and adapt existing, pre-trained AI models to new bushfire datasets, instead of starting from scratch.

- Example: A model trained on fire activity and weather patterns can be fine-tuned to include data from new weather stations or fuel maps.

Incremental Learning (Online Learning): Let models learn continuously as new data comes in — learning from new incident reports, resource movements, or sensor feeds as they happen.

- Example: A resource planning model refines itself with each new incident, improving forecasts in real time.



Why it matters: These methods keep models current and effective across dynamic fire seasons — but only if reliable, well-managed data pipelines are in place.

Indicative Timeline

Foundation (0-3 months)	Analysis & Early Implementation (3-6 months)	AI Integration & Scaling (6-18 months)
Assess data practices, establish governance, and define success.	Use existing data to uncover patterns and pilot basic automation or AI.	Advance AI, enhance real-time support, and integrate new data.

Ready to Begin Your AI Journey?

You don't need to solve everything with AI today, but you do need to start preparing now. Visit our **stand 431** to discuss your agency's unique challenges and opportunities.





BE SMART. TAKE PART — 1 JUNE

SMOKE ALARM ACTION DAY

WORKING SMOKE ALARMS SAVE LIVES

A working smoke alarm halves the risk of fatality in a home fire. Yet, alarmingly, nearly half of the homes damaged or destroyed by fire in NSW did not have a working smoke alarm. We all share the same goal —protect life.

01 June. Be smart and take part. Test your smoke alarm.



AN ANNUAL NATIONWIDE DAY OF ACTION

Supported by every State and Territory - where we collectively champion the simple but life-saving message:

Working Smoke Alarms Save Lives.



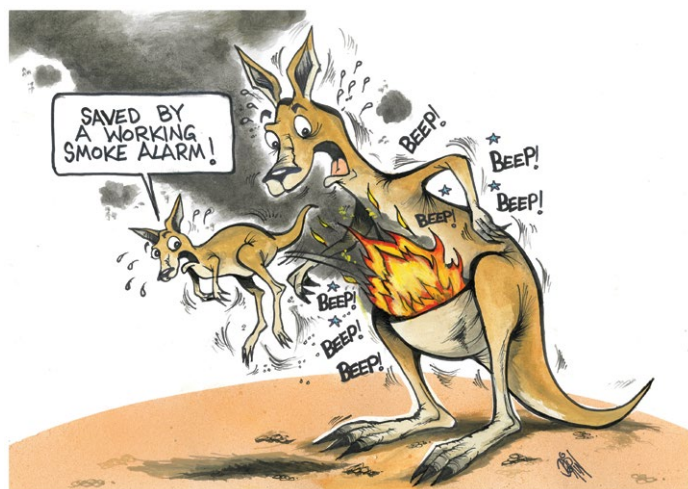
MEMORABLE PREDICTABLE

An annual date is easier for communities to remember. 01 June is the start of Winter, creating a predictable and memorable date for both our community and our agencies.



STRONGER TOGETHER

A nationwide effort that is supported and endorsed by each State and Territory sends a powerful and unified message. By coming together once a year, every year, our services can amplify the urgency and importance of smoke alarm compliance and maintenance.



A CONTEMPORARY YET ENDURING APPROACH

Collaborative messaging has conventionally been anchored to the change of daylight savings. With clocks changing automatically, and smoke alarm batteries lasting for 10 years, this messaging is verging on obsolete. We have the opportunity to pivot our efforts with messaging that is timeless.

PARTICIPANTS



BE SMART AND TAKE PART

Find out more at
fire.nsw.gov.au/smokealarms

BALANCING FIRE SAFETY AND SUSTAINABILITY

THE ROLE OF NATURAL VENTILATION IN MODERN BUILDINGS



AUTHORS | Srinath Iyengar, Dr Mohammed Ghaffari & Dr Amer Magrabi

INTRODUCTION

The integration of natural ventilation strategies into modern sustainable architecture has introduced new challenges for fire safety design and operations. Systems such as operable façades, stack ventilation, and double-skin façades are increasingly used to reduce energy demand and improve indoor environmental quality. However, these features introduce greater uncertainty in fire dynamics, smoke movement, and firefighter intervention tactics [1].

Diagram of the stack effect (chimney effect) in a room [Wikipedia]



FIRE DYNAMICS IN NATURALLY VENTILATED BUILDINGS

Natural ventilation changes fire behaviour by introducing uncontrolled airflow into compartments. This added oxygen increases the heat release rate and can accelerate flashover. Studies show that fires which decay in sealed rooms may become fully developed once an opening is introduced — a critical risk in high-fuel-load modern interiors. Open-plan designs and façade systems further complicate smoke movement. Instead of remaining in the room of origin, smoke finds alternate paths through natural ventilation openings. In double-skin façades, smoke can spread horizontally and vertically within the cavity, affecting multiple levels. These airflow routes — intended for passive cooling — can become smoke conduits during a fire, undermining compartmentation.

QUESTIONS

While natural ventilation improves sustainability, it also creates unpredictable fire and smoke behaviour. This work explores its implications for fire safety through the following key questions:

HOW DOES NATURAL VENTILATION ALTER TRADITIONAL FIRE GROWTH AND SMOKE BEHAVIOUR IN BUILDINGS?

CAN NATURAL VENTILATION SYSTEMS UNINTENTIONALLY COMPROMISE COMPARTMENTATION AND EGRESS SAFETY?

WHAT DESIGN STRATEGIES CAN MITIGATE FIRE RISKS WITHOUT UNDERMINING SUSTAINABILITY GOALS?



Photograph of One Angel Square (Manchester) with a double-skin façade. The building features an outer glass skin and an inner façade, forming a ventilated cavity in between. Automated louvers and operable windows in the outer skin open based on weather data, allowing air to flow into the cavity for natural cooling and exhaust [Wikipedia]

Naturally ventilated Sporting Grand Stand.



STRATEGIES AND RECOMMENDATIONS

To align natural ventilation with fire safety, a combination of passive design, smart controls and performance-based solutions is essential:

Automatic Closure Systems - Operable windows, vents, and façade dampers should be linked to smoke or heat detectors. When triggered, automatic closure can restore compartmentation and reduce oxygen supply, limiting fire growth — essentially preventing the fire from becoming ventilation-controlled.

Integrated Smoke Venting - Atrium roofs and vertical shafts should include dedicated smoke vents, which may be passive (e.g., ridge vents or skylights) or mechanical. Double-skin façade cavities can also serve as vertical smoke exhausts when properly designed. CFD smoke modelling helps optimise vent size and activation timing for worst-case scenarios [9].

Performance Based Design - A performance based approach is essential for fire safety in naturally ventilated buildings. Fire modelling and, where feasible, full-scale testing can identify critical risks—such as wind-driven smoke spread—before construction. In the absence of prescriptive code coverage for features like double-skin façades, engineers must demonstrate compliance with performance requirements. Sharing validated outcomes helps guide future codes and supports the safe integration of sustainable design features [10].

Enhanced Suppression and Detection - Codes such as NCC 2022 mandate full sprinkler coverage in atrium buildings, and designers should consider extending protection around façade openings and balconies. Intelligent mist systems and detectors near vents can provide rapid response and early smoke warning. Fire protection must match the openness of the architecture — sensing and suppressing fire wherever it may spread worst-case scenarios [9].

CONTACT



REFERENCES



Naturally ventilated Airport Terminal.



A fan, simulating wind, changes airflow and smoke conditions during experiments in a seven-story high-rise abandoned apartment building on New York City's Governors Island [Wikipedia]

Disaster Resilience Building & Culturally Diverse Communities: Highlights from a 2-year Project in Queensland



Fostering Culturally Inclusive and Future-Prepared Emergency Management

The Queensland Resilience and Risk Reduction Fund Impact Report
2020



redcross.org.au

Project in Numbers

- 105 Community Events and workshops held with CALD Communities
- 12,817 Handcopy materials distributed to community members
- 14,682 People attended community events with project team presence
- 3,177 Direct conversations around resilience at Community Events
- 1,217 People attended facilitated workshops
- 103 Volunteer involvement opportunities in project activities



Highlight: Community Resilience Sessions for TAFE Students in South-East Queensland

In response to feedback from TAFE tutors of Adult Migrant Education Program (AMEP) classes, the project team developed a series of community resilience building sessions that could be delivered across 3 weeks with the same cohort of students.

Building on session 1 which was largely focused on individual household preparedness, the focus of the following sessions were to create an opportunity for participants to reflect upon and understand their own lived experience and engage in facilitated group discussions.



Sessions drew upon Red Cross's RedCommunities program (a 2-year community resilience package) to encourage students to identify local risks, critically assess their community's capacity to respond to and recover from disasters, identify existing resources and networks available to support them – many of which were previously unknown to participants and explore opportunities to strengthen resilience at the community level. Over the weeks students learned how social capital is intrinsically linked to disaster resilience and recovery and many committed to, or had already joined, social and activity groups as a means to improving their own connectedness by the final session.

"Very easy and clear presentation, interactive group work, lots of real and personal examples, multicultural speakers"
Participant: TAFE Mt Gravatt campus



- Program delivered 6 times across 3 SEQ TAFE's (17 unique sessions)
- 141 students participated
- 16 Volunteers supported sessions delivery

The *Fostering Culturally-Inclusive and Future Prepared Emergency Management* project was a collaborative initiative co-designed by Australian Red Cross and Griffith University. Funded by Queensland Reconstruction Authority through the *Queensland Resilience and Risk Reduction Fund*.

Grounded in a participatory, evidence-based, and context-sensitive approach to community resilience building, the two-year project (2023-25) aimed to strengthen disaster preparedness and adaptive capacity within Culturally and Linguistically Diverse (CALD) communities, while also contributing to broader sectoral understanding of inclusive disaster risk reduction and climate adaptation strategies.

The project activities was delivered across 8 defined Local Government Areas across Queensland.

Objectives:

- CALD community leaders and migration support organisations are equipped with knowledge and skills to support CALD communities before, during and after a disaster
- Emergency management stakeholders possess increased capacities, knowledge and skills to provide culturally informed services to disaster impacted communities at all phases of emergency management
- There are increased opportunities for the development of connections, mutual understanding and trust between emergency management actors, CALD communities and migration support organisations
- CALD communities are represented in emergency management decision making forums
- Availability of relevant and usable tools for integrated Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) planning

Through deep partnerships, community-led approaches, and the mobilisation of volunteers and community members the project laid a foundation for more equitable, resilient, and prepared communities

Initiatives, some of which are highlighted here, were tailored to local needs by the community-based project officers and a dedicated team of volunteers.

The impact of the project will extend beyond its funded lifespan, with ongoing research, embedded community networks, and culturally capable practices continuing to shape the disaster resilience landscape in Queensland.

For further information regarding this project:

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Australian Red Cross
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Highlight: Business Continuity in Disaster – Townsville Multicultural Support Group

In Townsville, one of the project team members partnered with the Queensland Police Service (Emergency Services Department) and Townsville City Council (Disaster Management team) to support local culturally and linguistically diverse (CALD) leaders and agencies in building their understanding of the Queensland Disaster Management Arrangements (QDMA).

A key takeaway from this session was the importance of agencies having a Business Continuity Plan (BCP). During the session, the Townsville Multicultural Support Group (TMSG)—one of the region's leading multicultural service organisations—expressed concern about not having a formal BCP. Highlighting that, in the event of a disruption to its core functions, the organisation's response would likely be reactive rather than planned. Red Cross responded by engaging a local consultant as part of the project to co-design a BCP in partnership with TMSG.

The BCP was developed through a locally led, consultative process involving TMSG's General Manager and key staff, ensuring the plan is accurate, relevant, and practical for the organisation's operations. The BCP provides a management framework for TMSG to effectively respond to and recover from severe, unexpected events that could disrupt critical business functions and service delivery.

TMSG reported utilising their new BCP shortly after its completion when beginning in January 2025. Townsville was impacted by a severe rainfall event.



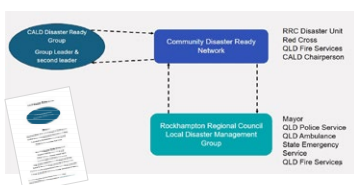
"This critical procedure and guideline will help TMSG maintain essential operations during disruptions and recover quickly afterward. The document is comprehensive and serves as a key component of TMSG's risk management strategy, reinforcing effective organisational governance"
Dr Tra Nguyen: General Manager TMSG (Jan 2025)

Highlight: A CALD voice into Disaster Management

In Rockhampton, Red Cross partnered with Rockhampton Regional Council to work towards the creation of a 'Disaster Ready Group' consisting of CALD cultural group members that could create a strategic two-way dialogue between the City's disaster management. The initiative aligns with the Council's commitment to inclusive disaster preparedness and community engagement

A pivotal partnership was established with the Central Queensland Multicultural Association (CQMA), a leading multicultural support service in the Rockhampton and Capricorn Coast areas. CQMA had previously developed a network of 43 Community Connectors representing 13 different cultural backgrounds across the Rockhampton region

The Disaster Ready Group is structured to convene quarterly, or more frequently as necessary, to discuss disaster-related issues pertinent to CALD communities. The group elects a Chairperson who also serves on the city's Community Disaster Ready Network, ensuring that insights and concerns from CALD communities are integrated into broader disaster management strategies (see flow chart below).



Highlight: A Diverse Volunteer Base

From the project outset the team committed not only to tap into Red Cross' existing culturally diverse volunteer base, but also took on the challenge of actively building it across the timeline of the project.

Whilst project activity opportunities were open to all volunteers, those from culturally diverse backgrounds were encouraged to participate with the team recognising the intrinsic value of having a team which was reflective of the diversity of the communities it was working with.

Importantly, the knowledge and skills learned by CALD volunteers extend far beyond their emergency service team preparedness, response, and recovery roles. Many of these volunteers are also embedded in broader community networks – informally sharing knowledge across their families, cultural groups, and local organisations. This ripple effect plays a vital role in strengthening community resilience from within.

"I've always gone to volunteering at maybe a function or occasion, it's more like it is fun to help out rather than work. My mum was also a part of Red Cross, and Red Cross as it's called in Bangladesh, she was a big part of it and that's where the enthusiasm came from... For non-English speakers it is an asset for Red Cross to have multicultural and multilingual people in the team so that it gives you more access to different communities and different people".
Red Cross Volunteer: Rockhampton

At the project conclusion volunteers reported finding their experience to have been both rewarding and insightful. They valued the opportunity to learn from individuals with different backgrounds and migration experiences, which deepened their understanding of the potential additional challenges these communities face in emergency situations.



New Emergency Service Volunteers recruited from CALD backgrounds:
• 21 in 2023
• 24 in 2024

Over 200 hours of volunteer time contributed to direct project delivery activities

Standards

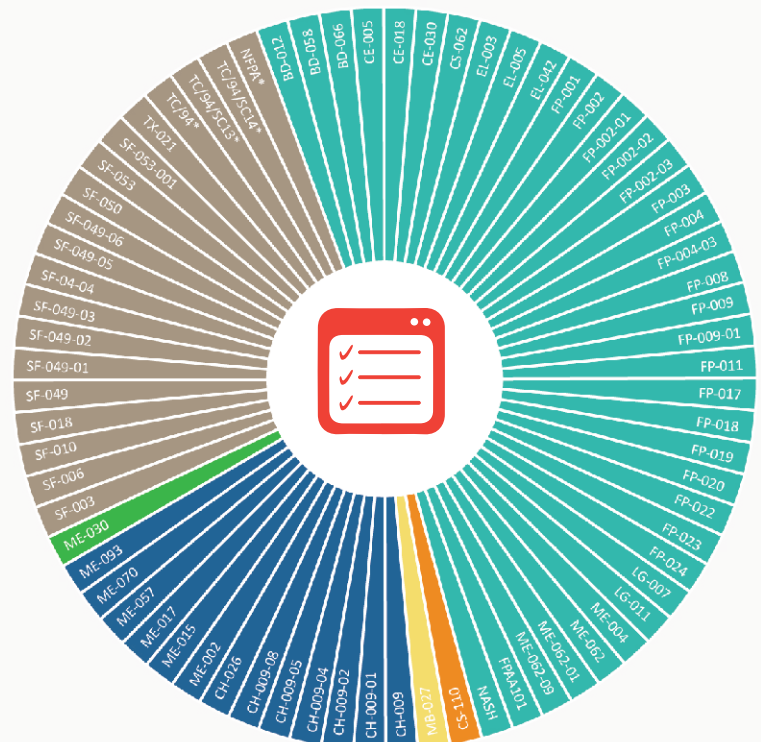
AFAC play a key role in the development and revision of Australian and International Standards which advance and guide the interests of the broader emergency management sector, these include:

- > Standards Australia
- > Joint Standards Australia and New Zealand Standards committees (AS/NZS)
- > International Standards Organisation (ISO)
- > National Fire Protection Association (NFPA)
- > Fire Protection Association Australia (FPA)
- > National Association of Steel-Framed Housing Inc. (NASH)

AFAC and its members have a significant voice to drive progress in the sector through the Standards community of representatives. AFAC member agencies are consulted when comment is provided in relation to the development or revision of Australian or International Standards, ensuring the collective view of AFAC member agencies is put forward.

Primarily AFAC participation focuses on:

- > management of fire related risks
- > fire protection and fire safety
- > standards for firefighter's personal protective equipment
- > fire protection systems and equipment
- > fire safety systems and equipment
- > storage, transportation and handling of dangerous goods/hazardous materials.



AFAC is currently represented on the following committees:

Built Environment and Planning Technical Group	
BD-012	Building Commissioning
BD-058	Thermal Insulation
BD-066	Prefabricated Concrete Elements
CE-005	Explosives
CE-018	Piling
CE-030	Maritime Structures
CS-062	Solid Fuel Burning Appliances
EL-003	Electric Cables and Wires
EL-005	Secondary Batteries
EL-042	Renewable Energy Power Supply Systems and Equipment
FP-001	Maintenance of Fire Protection Equipment
FP-002	Fire Detection, Warning, Control and Intercom Systems
FP-002-01	Installation Standards
FP-002-02	Product/Panel
FP-002-03	Network Monitoring
FP-003	Fire Extinguishers
FP-004	Automatic Fire Sprinkler Installations
FP-004-03	Combined Sprinkler & Fire Hydrant Systems
FP-008	Fire Pumps & Tanks
FP-009	Fire Hydrant Installations
FP-009-01	Drafting Subcommittee AS 2419.1
FP-011	Special Hazard Fire Protection Systems
FP-017	Emergency Management Planning – Facilities
FP-018	Fire Safety
FP-019	Passive Fire Protection (Chair)
FP-020	Construction in Bushfire Prone Areas
FP-022	Fire prevention and protection for mobile and transportable equipment
FP-023	Tunnel Fire Safety
FP-024	Bushfire Water Spray Systems
LG-007	Emergency Lighting in Buildings
LG-011	Photoluminescent Exit Signage
ME-004	Lift Installations
ME-062	Ventilation and Airconditioning
ME-062-01	Ventilation and Airconditioning
ME-062-09	Ventilation and Airconditioning
FPA101	Automatic Fire Sprinkler Systems Design and Installation
NASH	Steel Framed Construction in Bushfire Areas
Alternate and Renewable Energies Technologies (ARET) Technical Group	
CS-110	Bicycles and Bicycle Accessories

Community Engagement Technical Group	
MB-027	Ageing societies
Hazmat and CBRN Technical Group	
CH-009	Safe Handling of Chemicals
CH-009-01	Emergency Procedure Guide Working Group 1
CH-009-02	Emergency Procedure Guide Working Group 2
CH-009-04	Emergency Procedure Guide Working Group 4
CH-009-05	Emergency Procedure Guide Working Group 5
CH-009-08	Emergency Procedure Guide Working Group 8
CH-026	Safety in Laboratories
ME-002	Gas Cylinders
ME-015	Storage and Handling - Liquefied Petroleum Gases
ME-017	Flammable and Combustible Liquids
ME-057	Road Tankers for Hazardous Liquids and Gases
ME-070	Liquefied Natural Gas Storage and Handling
ME-093	Hydrogen Technologies
Operational Equipment Technical Group	
ME-030	Pumps
PPE Technical Group	
SF-003	Occupational Protective Footwear
SF-006	Eye and Face Protection
SF-010	Occupational Respiratory Protection
SF-018	Occupational Protective Helmets
SF-049	Firefighters Personal Protective Equipment
SF-049-01	General requirements
SF-049-02	Structural firefighting
SF-049-03	Wildland firefighting
SF-049-04	Hazardous materials
SF-049-05	Rescue
SF-049-06	CBRN
SF-050	High Visibility Clothing
SF-053	Personal Protective Equipment and Clothing
SF-053-001	Working Group 1
TX-021	Sun Protective Clothing
TC/94	Personal Safety - Personal Protective Equipment (Chair)*
TC 94/SC13	Protective clothing*
TC 94/SC14	Firefighters' personal equipment (Chair)*
NFPA	NFPA Correlating Committee on Fire and Emergency Services PPE*

*International Standards Committee

Response to Electric Vehicle Incidents - Foundation Training Course



A nationally consistent foundational training program co-designed with AFAC member agencies for Australian emergency responders to improve safety when responding to incidents involving electric vehicles (EVs).

17 AFAC member agencies participated in pilot testing over one week in April 2025.

69 Pilot testers completed the course over the test period.

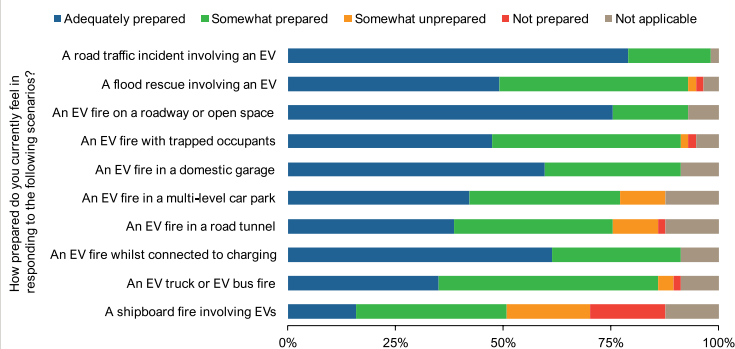
58 Pilot testers provided feedback on the course.

98% of pilot testers recommended the course to their colleagues.

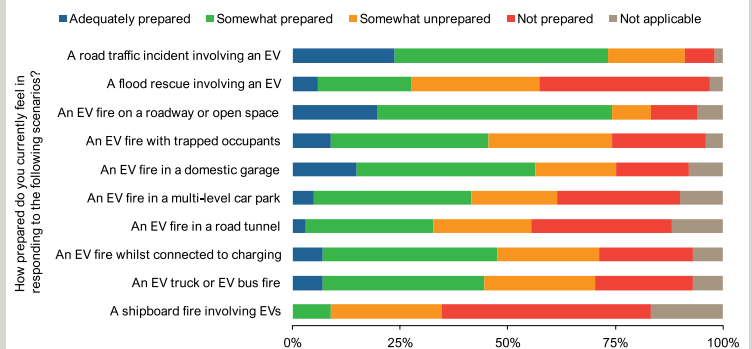
83% of pilot testers felt prepared to respond to EV incidents after the course (43% pre-course).

90% of pilot testers felt equipped to manage EV hazards after the course (54% pre-course).

POST-COURSE PREPAREDNESS (n = 58)



PRE-COURSE PREPAREDNESS (n = 102)



Pilot test participants gave an overall course rating of



"Videos were cut together very well, with the subject matter well presented. The flow and increase in technical information was logical and progressed well."

The fact that the course relies upon multiple SMEs across multiple agencies and jurisdictions tends to provide a level of comfort in terms of the subject matter and responses being accepted and standardised. Well done."

- D.S. (TFS)



The 3.5 hr online training course consists of 8 modules and features incident scenarios and short activities to support learning.



MODULE 1:
Introduction to EVs and LIBs



MODULE 3:
Response strategies for EV road incidents



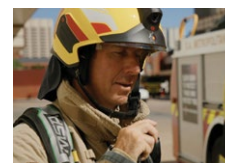
MODULE 5:
Response strategies for submerged EV incidents



MODULE 7:
Response strategies for EV fires in enclosed areas



MODULE 2:
Dynamic risk assessment and size up



MODULE 4:
Response strategies for EV battery failure incidents



MODULE 6:
Response strategies for EV fires in open areas



MODULE 8:
Post-incident considerations for EVs

www.afac.com.au/ev-training

Supplementary Resources

Glossary, quick reference guides, checklists and additional learning resources.

This program has been funded by the Department of Climate Change, Energy, Environment and Water and has been developed by AFAC and its member agencies in collaboration with TAFE NSW.



Stakeholder Perspectives of Alternative-water Urban Landscapes

Anna Louise Durkin (PhD candidate),¹ Prof John Fien,² Prof Felicity Roddick,³

¹ School of Architecture & Urban Design, RMIT University, Victoria ² School of Architecture & Urban Design, RMIT University, Victoria

³ School of Engineering, RMIT University, Victoria

Nature-based Alternative-water Treatment Landscapes (NATL) in New Urban Fringe Development Fosters Multiple Benefits Alternative-water landscapes create potentials to mitigate the some of the risks from natural hazards including Urban Heat Island (UHI) or grassfires / wildfires. Understanding stakeholder perspectives about Alternative-Water Urban Landscapes (AWUL) & NATL is necessary to aid implementation.

Urban context

Climate change effects will impact new urban fringe development.

Many cities and regional towns across Australia are developing new urban growth areas to accommodate population increases. For example, in Melbourne, 60,000 houses are proposed to be built in the next decade within these growth areas (State of Victoria, 2023). In the west of Melbourne, UHI will continue to be an issue if there is not careful consideration of green infrastructure provision and climate independent water source options. The urban / rural interface in fringe areas also brings the risk of wildfire.

Alternative-water and Green Infrastructure

Nature-based approaches such as NATL provide a local source of climate independent water by treating partially treated wastewater or greywater through landscape-based methods. Associated co-benefits of NATL include contributing to the mitigation of UHI effects and possible grassfire or wildfire risk reductions. In addition to this, other benefits can include: biodiversity enhancement, low-energy use, low-chemical inputs, and landscape therapeutic qualities.

State of Victoria. (2023). *Victoria's Housing Statement* / vic.gov.au. State of Victoria.
<https://www.vic.gov.au/housing-statement>



Image: A design exploration of a NATL (treated greywater located within urban development acting as landscape cooling, possibly reducing the spread of fire and as a source of local water for fire-fighting (Anna Durkin, 2023).

Stakeholders' reactions to AWUL

Stakeholders connected with AWUL were interviewed about the urban integration of AWUL and there were found to be both resistance and positivity towards the use of AWUL. The resistance included concerns over residual contaminants entering local water systems and landscapes and concerns about community backlash. The positivity included a realisation of the need for climate resilient tactics and the benefits of greater biodiversity.

Design iterations for stakeholder discussions

This research project has used a tactic of creating design iterations for NATL in urban fringe areas around Melbourne (the image above is for an area in Melton West). These design iterations were used in discussions with AWUL implementers.

Stakeholders' Response to NATL

In a workshop about the more specific topic of NATL, the design iterations were presented to stakeholders. The response also included both caution and positivity:

- Concern about impacts on local ecologies
- Concern about community resistance
- Positivity about UHI mitigation
- Interested in fire amelioration potentials

A journal article associated with a precedent analysis related to this work is:

Durkin, A. L., Roddick, F., & Fien, J. (2023). Nature-based alternative-water landscapes for water security and green space health. *Blue-Green Systems*, 5(2), 275–293.
<https://iwaponline.com/bgs/article/5/2/275/99203>



Further information

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annalouisedurkin@gmail.com

Elements that influence experimentation may change the pace and direction of its impacts

Evelyn Adade

Faculty of Arts, Monash University, Victoria

Water experimentation in rural/regional townships: Processes and Places

Amidst the complexities of climate change impacts of droughts to devastating impacts of floods, myriad of challenges in managing water resources, coupled with population growth, the need for innovative and sustainable water management strategies has never been more pressing.

Research Aim

The study aims to explore 'how is experimentation contributing to a transition in rural and regional townships towards more sustainable urban water management?' It is based on the notion that experimental strategies can go beyond optimising existing practices and instead challenge and transform them, leading to new ways of thinking, operating, and organising in rapidly changing rural and regional contexts.

Objectives

- Explore distinguishing place-conditions;
- Characterise key drivers and barriers;
- Map prospects and pathways for accelerating more experimentation
- Design an explanatory guideline for experimentation.

Methodology

Qualitative, Multiple case (embedded) study
Semi-structured interviews: 26; Document analysis

Learnings and findings

- Lack of clearer policy at the state level.
- Organisations often prioritise jurisdiction-specific concerns, which can create a defensive rather than innovative space in forums.
- Consolidating knowledge about best practice would probably be the best outcome for more SUWM.

Quotes

"Stormwater management has not necessarily been a huge priority for the State government in terms of policy development" Ex 2.



Quotes

"Policy needs to clearly articulate what value it provides to the developer and have a mechanism for allowing them to capture that value" Ex 1.

"How can we use what's a problem for us to become a resource for you to use? For instance, CMA says "that's your problem with the stormwater, anything you do, you must make sure that it doesn't impact on the flood levels. It's just a barrier not a solution or an innovation and not working with them to come up with a solution and just saying well you've got to tick this list off. You can't innovate when you're a defensive position!" Ex. 4.

"it's frustrating that grant funding is always looking for innovation, because sometimes we want to do what is known to work/best practices. I think consolidating and understanding what works and doesn't work" Ex 6.



Further information

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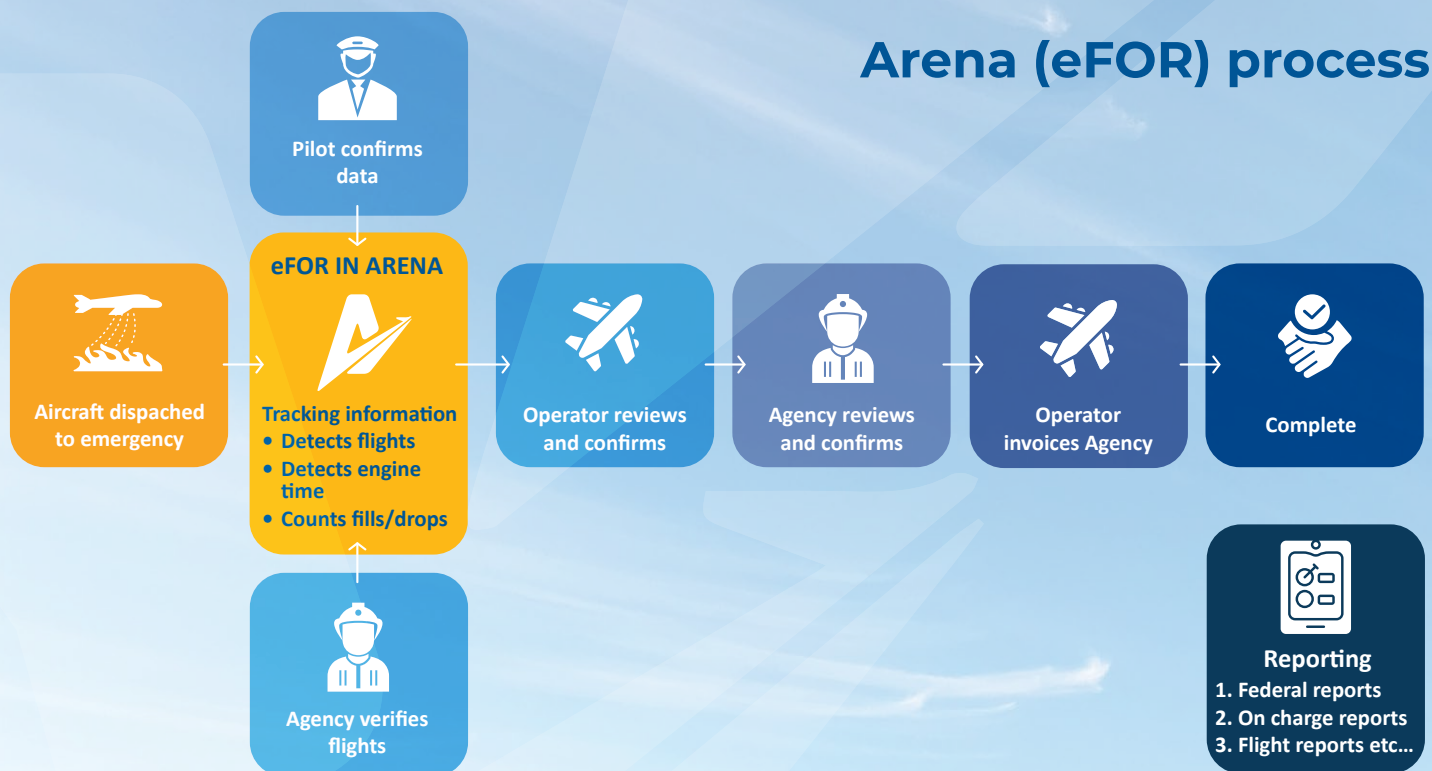
Streamline your electronic Flight Operations Returns with ARENA (eFOR)

Introduced in 2019, the returns module has electronically simplified the recording of flight data, reconciliation of agency and operator information and financial administration within ARENA.

The returns module in ARENA allows for:

- **SEAMLESS INTEGRATION:** Easily connect aircraft tracking data and contract info in ARENA.
- **ACCURATE BILLING:** Automatically calculate costs and ensure timely and accurate invoicing.*
- **RELIABLE TRACKING:** ARENA can integrate tracking data into one source of truth.*

Arena (eFOR) process



ARENA is an Australian and New Zealand system for supporting the use of aircraft for fire and emergency response. Key features include:

AIRCRAFT AND EQUIPMENT: A comprehensive registry of aircraft and equipment vital for efficient emergency operations.

PROCUREMENT: Streamlined processes to assist in the acquisition of necessary resources swiftly and effectively.

PLANNING: Robust tools to help with strategic planning and preparation for emergency scenarios.

PREPAREDNESS: Describing readiness through detailed readiness assessments and preparation protocols.

AIRCRAFT DISPATCH, RETURNS, AND TRACKING: Tracking and management of aircraft deployment and returns, ensuring optimal resource utilisation.

COMPLIANCE AND AUDIT: Encouraging compliance and auditing practices to ensure operational integrity.

ADMINISTRATION: Simplifying administrative tasks with efficient tools for data management and reporting.

* Disclaimer: ARENA is designed for recording flights and is not intended as a financial tool. The accuracy of the information provided by ARENA depends on the tracking device used.

For more information visit www.nafc.org.au/arena or email arena@nafc.org.au

Changing landscapes, shifting meanings: settler representations of Cultural Fire

Gabrielle Miller,¹ Dr Andrea Rawluk¹, Dr Rebecca Ford¹

¹ School of Agriculture, Food and Ecosystem Sciences, The University of Melbourne, Victoria ¹

Exploring social representations of Indigenous Cultural Fire

This study explores the social representations among non-Indigenous people in a Victorian case study of Indigenous Cultural Fire. We identified four *evolving* representations; shaped by diverse experiences, knowledge, and fire narratives, and each with implications for practice and attitudes toward Indigenous fire management.

Why representations matter

In southeast Australia, cultural burning initiatives are expanding alongside growing settler interest and institutional partnerships. While research documents the success of some collaborative projects, enduring barriers remain. Research and Indigenous practitioners have highlighted the critical role of settler representations in shaping respectful partnerships and dismantling barriers¹. Yet, non-Indigenous representations of Indigenous Cultural Fire (ICF) remain underexamined. This project explores different social representations of ICF among non-Indigenous people through a case study of East Gippsland, Victoria.

What are social representations (SRs)?

Social Representations are shared, socially constructed, systems of values, ideas and practices that help people make sense of novel or unfamiliar concepts. They shape behaviour and attitudes; studies show different SRs of biodiversity and forests influence perceptions of how they should be managed. Social Representations Theory is used in this study to explore the different meanings and practices associated with ICF, and how these emerging representations may influence possibilities for collaboration.

Phase 1: East Gippsland case study

This research used a mixed-qualitative approach focusing on a case study of East Gippsland/Gunaikurnai Country.

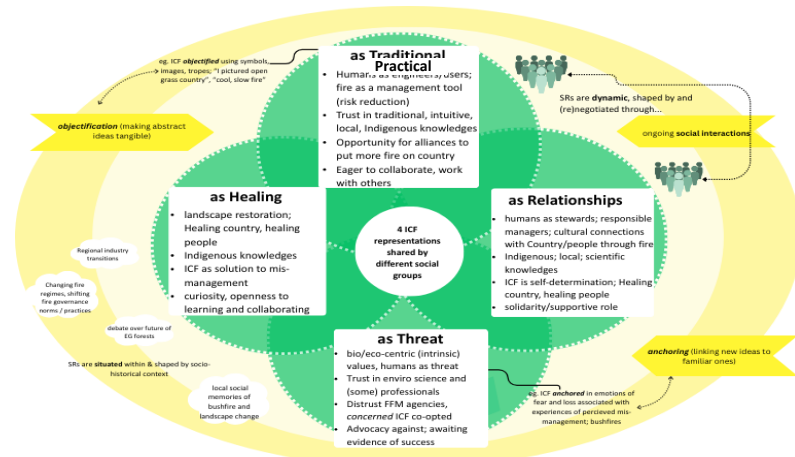


Fig 2. Four evolving social representations of ICF. Representations are characterized by different prioritisation of four components underlying discussions of ICF; human-fire-nature relationships (HFNR), Values (of nature), Trusted knowledges, and Expected landscapes (adapted Buijs et al. 2008; Ford et al., forthcoming). SRs of ICF are each associated with different attitudes towards fire (and land) management generally, and have implications for behaviour and attitudes that may support (or hinder) Indigenous fire stewardship.

Data collection involved 33 interviews with non-Indigenous people and ethnographic fieldwork conducted at community events where Indigenous knowledges and cultural practices were discussed.

Emerging representations of ICF

In discussing ICF, participants drew on diverse concepts to link their understanding with existing knowledge, experience and practices of more familiar *objects* of fire, forests and nature. We identified **four core components** underlying discussions (see Fig 2.). Participants combined and prioritised notions of these components in different ways, forming **four overlapping SRs of ICF** shared by distinct social groups, as illustrated in Fig 2.

Insights: entry points for change

Findings highlight the emergent and contested nature of ICF representations; suggesting a moment of change in public understandings of the place of fire and Indigenous knowledge and practices in the landscape. Our analysis reveals several elements of SRs shared across individuals and groups, and even more that are contested; providing insight into 'windows of opportunity' for social change. Findings may support improved communication and engagement strategies to enable culturally-informed, respectful engagement and future fire collaborations.

Further information

For additional information contact:

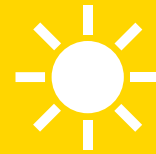
Gabrielle Miller, PhD Candidate, The University of Melbourne
miller.g@unimelb.edu.au

Irrigated Green Firebreak Research to Complement Wildfire Management in Queensland's Wildland Urban Interface

Jady Smith

Forest Research Institute,

University of the Sunshine Coast, Queensland



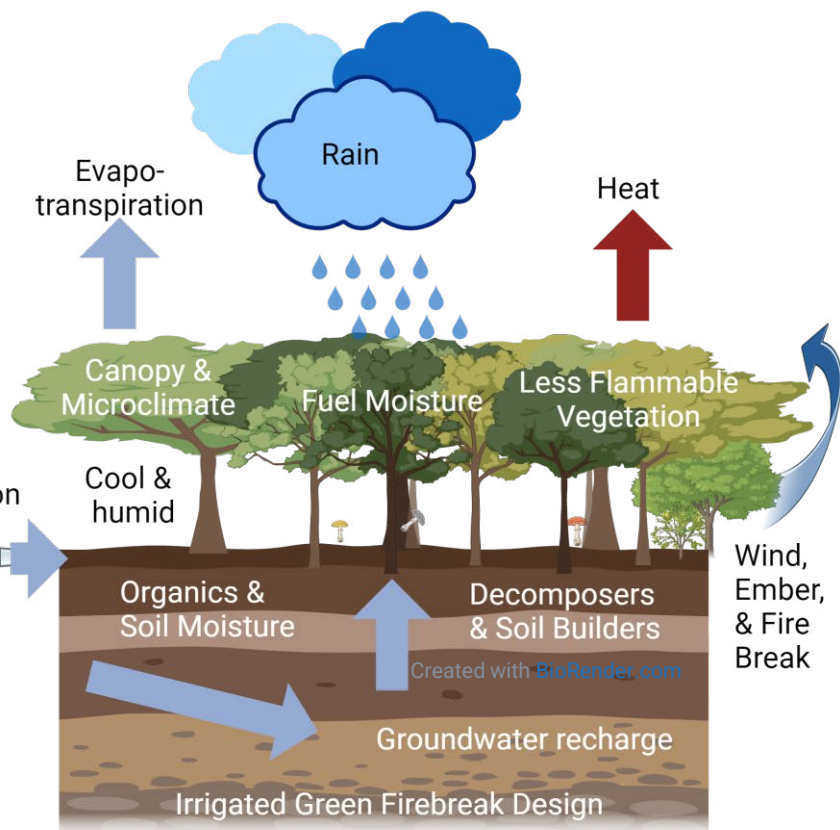
WHY: The growing scale and intensity of wildfires are becoming harder to manage, increasing risks to people and assets, especially in the vulnerable Wildland Urban Interface.

Green Firebreaks proactively use less-flammable species, land uses, or ecosystems, to reduce fire spread and intensity thereby complementing wildfire management.



DESIGN: Green Firebreaks may have trade-offs; wind can increase ember risk, and in extreme conditions, vegetation can become fuel.

Green Firebreaks may be strengthened if they are irrigated with urban water reuse, and designed to maintain moisture, while reducing temperature and wind.



HOW: Fire spread software scenarios, will be run, with (design) and without (control), Irrigated Green Firebreaks in Noosa's Wildland Urban Interface, to consider the hypothesis, that they reduce wildfire risk, and complement wildfire management.



Less Flammable Vegetation (Leaf)



Increased Moisture (Water)



Reduced Ignition/Fire (Flame)

Australian Journal of Emergency Management

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Types of AJEM articles

Research

Research suitable for AJEM reports the findings of original research and should have the markers of research scholarship. Research papers can be up to 8,000 words and undergo double-blind peer review. Research papers should be original, have not been published previously and are not being considered for publication elsewhere.

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Reports are descriptions of practices, projects, incidents, major initiatives and policies within the scope of AJEM and of interest to those with a role or interest in disaster resilience or emergency management. Reports can be up to 4,000 words and may be single peer reviewed if required.

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News and views articles are short information and communication articles describing events, program updates, announcements, initiatives, policies, workshop outcomes, professional development and other items of interest to AJEM readers.

Other articles include Viewpoints, Opinions, Book reviews, Letters to the Editor and Special Issues of AJEM.

The Australian Journal of Emergency Management (AJEM) supports a disaster resilient Australasia. AJEM has published research, reports and relevant information related to emergency and disaster issues across society, all levels of government, community, business and non-government sectors since 1986.

The purpose of the publication is to create a world-class journal to advance disaster resilience and emergency management research, evidence, knowledge and practice; reflecting a system-wide perspective.

Scope

AJEM is both scholarly and practical in its orientation.

AJEM publishes peer-reviewed research papers and non peer-reviewed reports, news and views, viewpoints, opinions and book reviews. Research papers constitute original research and should be methodologically sound, theoretically informed and of relevance to the AJEM audience.

AJEM publishes contributions in the areas of:

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- community engagement.

AJEM welcomes cross-cutting, interdisciplinary and innovative articles addressing multi-faceted aspects of emergency management. AJEM recognises the complexity of practices, sectors, disciplines and approaches to emergency and disaster management and the Editorial Committee will consider all submissions.

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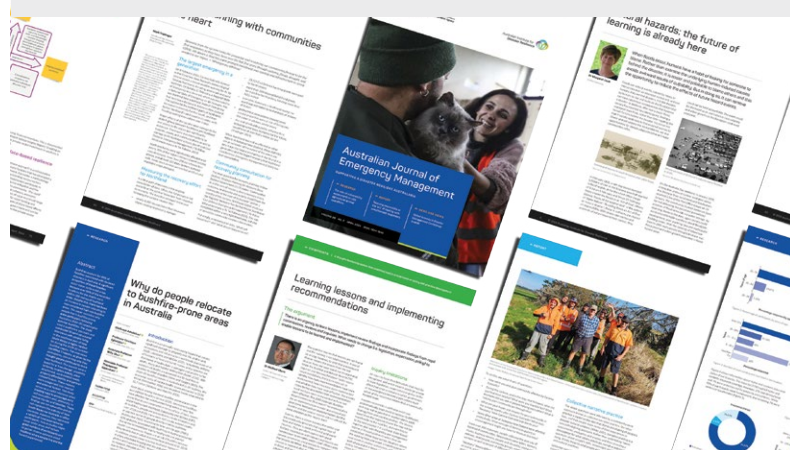


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Australian Government
National Emergency Management Agency



How do we fuse multi-sensor remote sensing data to precisely detect active fires in near real-time?



Natural
Hazards
Research
Australia

Nur Trihantoro,¹ Prof Simon Jones,¹ and Assoc Prof Karin Reinke¹

¹ Faculty of Geospatial Science, RMIT University, VIC

Advanced Data Fusion for Near Real-Time Active Fire Detection

Polar-orbiting satellites provide fine spatial resolution, while geostationary satellites offer frequent observations. By fusing multiple Earth observation sensors via data assimilation, we harness these complementary strengths to deliver near real-time (under 10 minutes) active fire detection.

Data Sources and Fusion

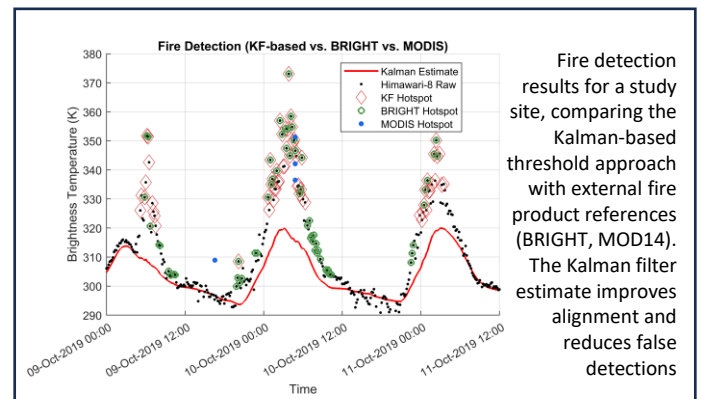
Geostationary sensors (Himawari-8/9, GeoKomsat-2A) provide frequent snapshots that reveal short-term temperature spikes, while polar-orbiting sensors (Sentinel-3) capture finer detail but revisit less often. By **fusing these data**, each sensor's limitations are offset by another's strengths, creating a continuously updated background temperature for rapid fire detection. The framework is **sensor-agnostic**, so future satellites can be integrated if they provide thermal infrared observations. Because sensors differ in resolution, revisit time, and spectral response, straightforward averaging can bias the background temperature. We address this using a **spatio-temporal weighting scheme** that accounts for time offsets, spatial footprints, and spectral closeness to the reference wavelength.

Kalman Filter and Data Assimilation

A **Diurnal Temperature Cycle** model estimates baseline thermal fluctuations. Observed satellite brightness temperatures are then assimilated to refine the background estimate. **Ensemble Kalman Filtering** adjusts for sensor discrepancies and noise, producing accurate background temperatures used for fire detection.

Why Not a Machine Learning Approach?

While deep learning shows promise, it demands extensive labeled data that cleanly separates fire from non-fire under diverse conditions. This challenge grows when fusing satellites with different resolutions, noise, and cloud contamination. A Kalman Filter approach is more **transparent**, **adaptive**, and **robust** for near real-time data streams, without retraining when new sensors or regions are introduced.



Stratified Study Case for Australia

A continent-wide experiment was conducted using carefully selected pixels that span various **climate zones**, **land cover types**, and **bioregions**. This stratified approach ensures that the chosen sites are representative of the diverse environmental conditions across Australia, demonstrating that our method is effective across the entire continent.

Three Kalman Filter Iteration Approach

Our Ensemble Kalman Filter performs **three assimilation-and-detection** passes. The first pass uses a strict threshold for major fires, minimizing false positives but missing smaller ignitions. The second lowers the threshold, capturing more fires at a slight risk of false alarms. The final pass is least restrictive, flagging subtle anomalies that could be early-stage fires, albeit with higher false detection. Together, these iterations **balance** conservative confirmation of large fires with broad coverage of smaller potential ignitions, **all within 10 minutes**.



Further information

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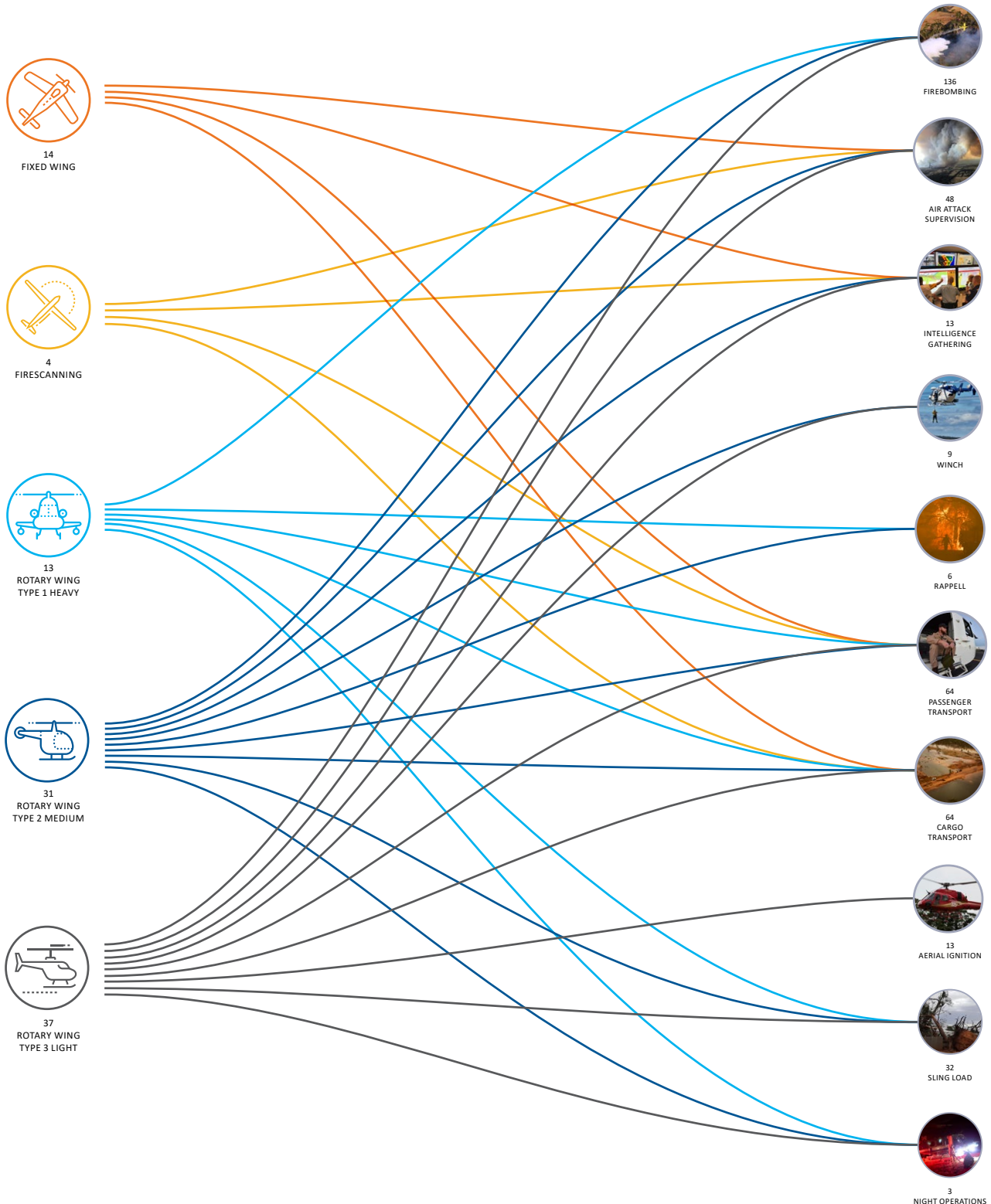
Australian Government



NAFC's Multi Role Capability*

A benefit of the NAFC contracted Fleet across Australia is its multi-role and multi-use nature, where the states and territories are supported by a wide range of emergency aviation possibilities, beyond the key purpose of firebombing. Additionally, the multi-use aspect of the fleet is aided by the design of the contracts that facilitate sharing resources across borders – where one state may not have access to a particular role aircraft, it can borrow from a state that does. NAFC is proud to support its members to access safe, effective and efficient aircraft, largely from Australian industry.

*NAFC CONTRACTED AS AT JUNE 2024



Ecosystem service economy aligns with culturally-aligned, resilient *Forever Industries*

Oscar Metcalfe,¹ A/Prof Kamal Sangha,¹ Prof Jeremy Russell-Smith,¹ Prof Anne Poelina,^{1,2} Lachie Carracher,² and Prof Robert Costanza³

¹ Research Institute for the Environment and Livelihoods, Charles Darwin University, NT

² Martuwarra Fitzroy River Council, WA

³ Institute for Global Prosperity, University College London, UK

A situation analysis—Industries for and with community, culture and water

Beef pastoralism, mining and energy and irrigated agriculture offer few jobs or benefits to local and Indigenous communities. Ecosystem service (ES) industries—carbon, nature repair and tourism—may offer enduring, dispersed and accessible opportunities to support local self-led development and build resilience.

Martuwarra Living Waters (Fitzroy River, WA)

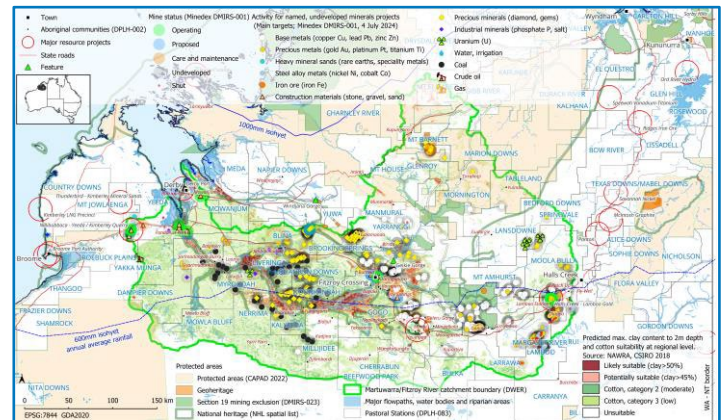
An entity of Country, Martuwarra relates in *ecokincentric*, *mutually-reciprocal*, *owneeship* with its people.

The current economy is mostly extractive and exclusory of Aboriginal people, with nature framed as an extractable resource, with costs externalised and accrued locally with benefits exported. ES-based *Forever Industries* aligned to Indigenous worldviews, knowledges and values would be holistic, circular, inclusive and embrace complexity for the long-term wellbeing of people with nature/Country.

Economic situational analysis, current and potential futures

Using public, ABS, CSIRO and industry data, the author found:

- Pastoralism (beef cattle grazing) is mostly uneconomic when enteric emissions (burps & farts) are internalised to costs, with average Kimberley enterprises losing -\$0.86/ha. In 2021, catchment residents had 99 jobs (of whom 30% were Aboriginal)
- Mining and fossil energy yields about 10 jobs to catchment residents, with job growth focused on high skills and automation profiting private interests and State revenue
- Irrigated agriculture is set to expand and intensify with \$100M-\$300M+ gross margins from industrial and hay crops to benefit mostly private interests in absence of water rights or revenue to state, with land clearing reducing nature-based opportunities
- The carbon and nature repair industries potentially offer >\$8.5M and \$21M annually, respectively, or >\$1/ha each, as extensive land uses that improve natural assets
- Tourism drives local jobs, opportunities and better circulates benefits compared to mining and energy, further increased by new national parks (Volgger et al., 2021)



Business as usual (BAU) limits future directions

Pastoralism, mining and energy and irrigated agriculture typically export benefits while (based on present patterns) offering few jobs to locals and externalise long-term climate and environmental costs, which undermines conservation-based opportunities. Impact risk is highest where activities co-occur with environmental and cultural assets, particularly in riparian zones (*map*), in likely conflict with opportunities seeking long-term outcomes for and based on healthy water, biodiversity, community and catchment/Country.

Forever industries reflect holistic, systems and long-term thinking

These results support a wider systems, all-sector and long-term perspective versus continuing BAU, and may be used as targets to assess point and area-based activities, e.g. natural hazard and disaster preparation, mitigation and adaptation. Co-design with and regard for all residents, future generations and the cultural and natural assets of Earth's largest intact savanna ecosystem will better serve current and future generations in relationship with Martuwarra Living Waters.

Further information

For more, contact:

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JAGUN ALLIANCE



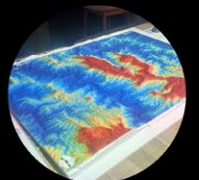
We want to improve land management and build resilience back into Jagun (country) by developing partnerships with local First Nations communities, government organisations, private landholders and the wider community.

Since 2023, Jagun Alliance Aboriginal Corporation has successfully conducted 84 cultural burns across Northern New South Wales, covering a total of 174 hectares. In addition, we have delivered over 35 workshops, supporting knowledge sharing and community engagement.



By utilising cultural calendars, drawing on the knowledge of local custodians, and responding to the needs of Jagun (Country), we are able to conduct burns over extended periods. This helps create safe havens for native species during catastrophic bushfire events.

By integrating technologies such as 3D mapping, online mapping platforms, and ArcGIS, we are able to share our stories in innovative and engaging ways that inspire positive change and deepen understanding of Country (Jagun).



Insights into Temporary and Emergency Accommodation

Prof Mel Dodd,¹ Nikhila Madabhushi,² Dr Duncan Maxwell,³ Dr Rachel Couper,⁴ Bhiemie Williamson,⁵ Dr Emma McNicol,⁶

^{1, 2, 3, 4} Faculty of Art, Design & Architecture, Monash University, VIC ⁵ National Indigenous Disaster Resilience, Faculty of Arts, Monash University, VIC ⁶ Centre for Excellence for the Elimination of Violence Against Women, Monash University, VIC

This research will capture learnings and improve post-disaster temporary housing supports for impacted people moving into stable housing.

Project Description

This research will drive change through evidence-informed policy, strategy and application of lessons from disasters, to inform future practice in housing recovery.

This project will use trauma-informed methods to understand the lived experiences of individuals, communities and recovery practitioners in different states and territories of Australia. By developing case studies from each state and territory, this research will capture different approaches taken to support and transition disaster-impacted people to stable housing including comparing these approaches. It will deliver resources for practitioners and communities to utilise in future events. The research aims to assist diverse people impacted by disasters to strategise, manage and implement post-disaster housing, from immediate shelter to long-term stable solutions, across various phases.

Intended Outcomes

Workshops with government agencies, recovery practitioners and end-users will feed directly into co-developing best practice guidelines and policy briefs, including a common language. We will work across case studies from each state and territory to identify gaps in delivery of pathways to stable housing. By doing this we will create a systematic and flexible national housing recovery approach, that can be readily implemented. Specific regard to complexities of each state or territory will be embedded within its design. The research will contribute to the development of evidence-informed disaster preparedness policy, strategy, best practice principles and national resources and a 'roadmap' tool to achieve these outcomes. Analysis and evaluations by occupants, recovery practitioners, service providers and government agencies will help better understand how

Communities can recover, thrive and live with dignity. Our methods will enable participants to "speak their world", offering new knowledge that can be translated into impactful ways of building community resilience.

Implementation potential

The stakeholders and audience for this research are broad. In addition to Social Recovery Reference Group (SRRG), the research and practice sectors along with non-academic audiences such as localised community groups would benefit from diverse translations of this highly applied research. As such, to increase the impact of traditional reports, policy briefs and academic publications, we will develop handbooks, guides and "journey maps" for diverse audiences, using communication design to tailor outputs accordingly. Furthermore, non-traditional outputs such as film, photography and public exhibitions will be used in sensitive and creative ways to create easily digestible translations of our research findings and outcomes.



Image: Minderoo Pod, Kangaroo Island, www.minderoo.org (2020)



Further information

For additional information scan the QR code or contact:
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Reflections on four years of empirical evaluation of bushfire detection technologies

Nicholas Wilson^a, Marta Yebra^{ab}, Geoff Cary^a, Adam Leavesley^c and Deborah Stanley^{c*},

^aFenner School of Environment & Society, Australian National University, ^bSchool of Engineering, Australian National University, ^cACT Parks and Conservation, *presenting author.

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Bushfire Research
Centre of Excellence



Fire detection technology

We developed and applied methods to evaluate novel fire detection technologies. This poster presents an overview of:

1. Four novel fire detection technologies
2. The different methods used to test their performance
3. How well each method captures the key limitations of the technologies being evaluated.

Drones use thermal cameras and visual spectrum cameras to detect heat and smoke, respectively.

Limitations: Distance, occlusion and fire size.

Evaluation: Experimental burns and artificial heat and smoke signals may be best suited for controlled assessment of distance and occlusion. Planned burns and simulations may enable better assessment of the influence of fire size and behaviour on detection.



Satellites detect thermal anomalies

associated with fires, but smoke detection is also possible.

Limitations: Image resolution, overpass timing and cloud cover.

Evaluation: As an operational technology with low sensitivity to small fires, satellites are best evaluated using data from larger fires, that are likely to burn for long enough to be detected, such as wildfires and hazard reduction burns.



Terrestrial sensor networks of wireless smoke (CO₂ and TVOC) sensors (<2km spacing).

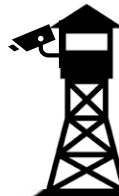
Limitations: Distance and smoke transport

Evaluation: Planned burns enable planned evaluation data collection, but deployment of sensors in advance can be challenging. Experimental burns and artificial signals enable controlled data collection. Simulations of smoke transport may offer the best opportunity for evaluation at an appropriate scale.

Cameras mounted on fire towers and other vantage points enable AI detection of smoke.

Limitations: Distance, line of site, visibility and smoke transport.

Evaluation: Artificial signals and experimental burns offer some opportunity for experimentation but produce small smoke plumes. Planned burns generate realistic smoke and enable planned data collection. Wildfires enable comparison of detection between cameras. Simulations enable better understanding of smoke transport under a range of conditions.



Tools for evaluating detection technologies

Unplanned fires

- Serendipitous detection of unplanned fires (the target signal) from deployed sensors.
- Limited potential for planned data collection and unreliable ignition time and location data.



Planned burns

- Experimental data collection of fire in bushland fuels, run by collaborating fire agencies.
- Typically, only mild weather conditions; Ignition patterns may limit similarity with unplanned fires.



Experimental burns

- Experimental data collection from small fires set within a hard perimeter
- Enables easy implementation and controlled conditions.



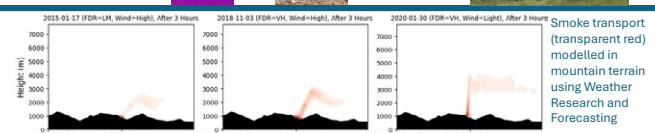
Artificial signals

- Creation of artificial fire signals using smoke machines and outdoor heaters.
- Signal characteristics are controlled and repeatable and safer to implement than real fires, but signals are weak compared to wildfire.



Simulations

- Computer simulations of fire signals generated under specified weather and fuel conditions and sensor deployment.
- Model inputs and outputs are only an approximation of real conditions.



Categories of fire:

A four-category system for describing bushfires by resource requirements

Kristy Butler & Nick McCarthy

Research and Development, Country Fire Authority



Background

Categories of fire is a new approach to classifying bushfires, developed by CFA's Research and Development team. The categorisation distinguishes fires based on the level of resourcing required to contain the fire at a point in time. We propose this categorisation as an alternative metric for suppression and response models, in place of metrics such as 'contained in initial attack'.



Category 0

A bushfire that is not spreading, or self-contained by its surroundings or weather. No resourcing required to contain the fire.



Category 1

A bushfire that is spreading, but containable with default suppression resourcing (e.g. up to five tankers).



Category 2

A bushfire that is spreading, but containable with surge resources such as additional tankers and aircraft. This fire is sensitive to the timing and weight of suppression effort.



Category 3

A bushfire that is spreading and not containable, regardless of resourcing. Resourcing still required for defensive firefighting and asset protection.

Methods

Between 2022 and 2024, we presented the categories approach to operations staff to test the idea, who were supportive of the proposed approach and assisted with the definitions. We then explored whether fires could be classified into these categories using data from available fire reports and situation summaries. Based on the category definitions, we developed a flow chart with structured questions (see Fig 1, Table 1). This method was applied to a dataset of all reported Victorian wildfires from 2021 - 2025. The width of lines in the flow chart represent the number of wildfires corresponding to each response (along with the labelled percentage). Category 2 fires were the most challenging to identify, as the available data did not allow for definitive classification.

Table 1. Questions and indicators for the flow chart process

Question	Indicators
Did it self-extinguish?	- Fire report shows 'self-extinguished'
Was it spreading?	- Area greater than 5 ha; - Attended by FFMV and CFA; - Public warning issued (Advice, Watch and Act or Emergency Warning); - Key words (e.g. 'spreading', 'make tankers', 'blacking out'; or - Burnt area mapped.
Was it contained in initial attack?	- Time to 'under control' is less than 4 hours from reported time.
Did surge resources attend?	- > 8 vehicles attending the fire within the first 4 hours, or - Aircraft attendance within the first 4 hours
Were there problems encountered in the response?	- Fire report contains entry for 'any problems encountered', such as difficulty accessing scene or delay in attendance.

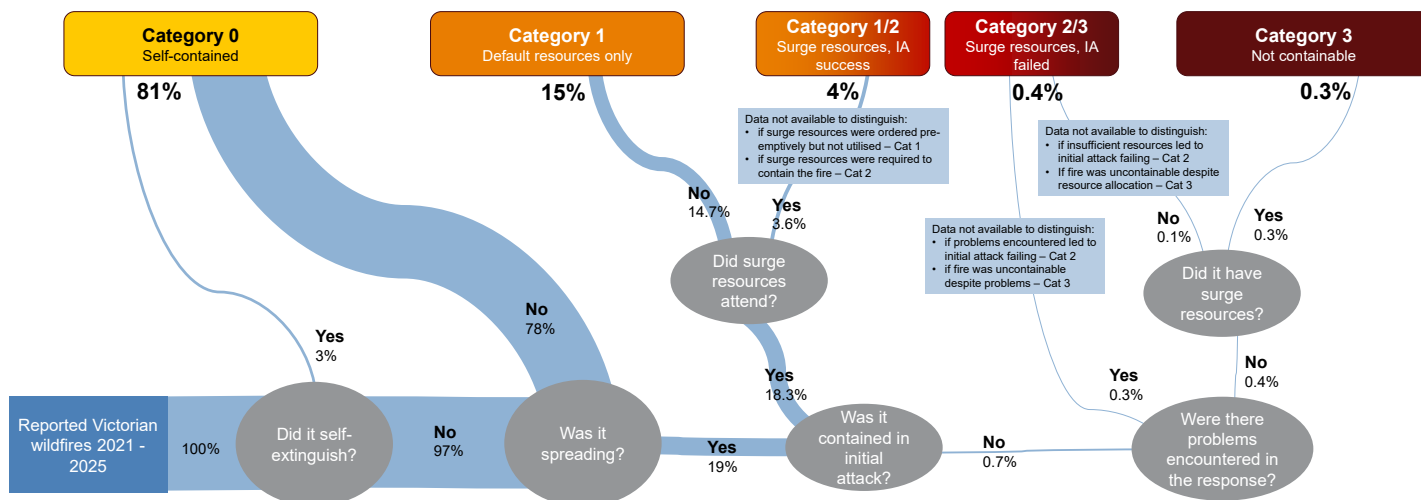


Fig 1. Flow chart process to separate fires into categories

Results

The categorisation process is already providing useful insights about bushfire response in general, and on specific types of days. Fig 2 shows the breakdown across all days in the study period, while Fig 3 - 5 show the breakdown of categories for three days with high number of fire reports, and similar proportions of fires controlled in initial attack. Some key findings include:

- 81% of fires attended by agencies were found to be effectively not spreading (excluding false alarms) (Fig 2).
- A small (0.3%) proportion of fires are unable to be contained in initial attack, regardless of resourcing. This proportion could increase to up to 2-3% of fires on significant days, such as those with 'Catastrophic' or 'Extreme' fire danger ratings (Fig 4).
- The proportion of Cat 1 and 2 fires varies significantly across different days. For example, 4 Feb 2025 had 30% of fires falling in these categories (Fig 5). This is significant because resource constraints or delays to initial attack may lead to prolonged incidents, compared to Cat 0 fires where fire agency attendance is less critical.

Conclusions and future work

- Fire categorisation by resource requirements provides a useful framework for describing operational differences and resource needs across fire days.
- This descriptive approach has potential for predictive and prescriptive applications to improve preparedness, readiness and response policy settings.
- Understanding Cat 0 (self-contained) and Cat 1 (default resources) fire workloads supports organisational performance measurement. Identifying conditions leading to Cat 3 (Not containable) fires will inform strategic resourcing for activities outside of initial attack, such as asset protection.
- Future work will examine using expert elicitation from fireground commanders to identify 'close call' fires. Identifying and optimising response for Cat 2 fires will lead to better outcomes, as these fires are most sensitive to the timing and weight of initial attack resourcing.

All fires 2021 - 2025
32,810 fires, 99% contained in initial attack

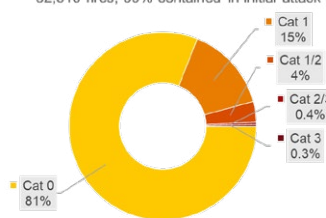


Fig 2. Proportion of fires in categories across all days in 2021 - 2025.

1 Jan 2022
80 fires, 98% contained in initial attack

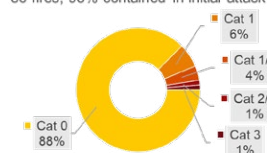


Fig 3. Proportion of fires in categories reported on 1 Jan 2022. Most of Victoria was not available to burn due to wet fuels, other than in the far west. One fire in a remote location and was unable to be suppressed by initial attack resources.

13 Feb 2024 (TFB)
119 fires, 97% contained in initial attack

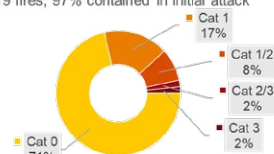


Fig 4. Proportion of fires in categories reported on 13 Feb 2024. A 'Catastrophic' fire danger rating day for one district and 'Extreme' in multiple other districts. Dry lightning ignited several fires in the Grampians (Gariverd). Forty-six houses were lost at Pomonal along with many other impacts. Multiple fires still not contained at end of day.

4 Feb 2025
80 fires, 97% contained in initial attack

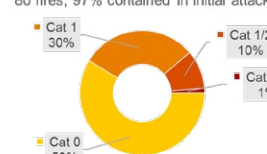


Fig 5. Proportion of fires in categories reported on 4 Feb 2025. A 'High' fire danger rating day across the state, with no major fires, during a busy season with high underlying dryness across the state.



Crisis to Calm

Co-designing a mental health intervention for young people affected by disasters

Introduction

Young people are at risk of long-term mental health difficulties resulting from climate disasters, yet they are rarely invited to inform the development and delivery of solutions.

Co-designing recovery supports and resources with young people is critical to ensuring that mental health initiatives delivered after disasters are targeted, accessible and engaging.

Youth mental health intervention and disaster resilience is urgently needed in rural and remote Western Australia.



Authors

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Affiliations

¹School of Population Health, Curtin University, ²Curtin enAble Institute; ³Crisis to Calm Youth Co-researcher, ⁴Department of Fire and Emergency Services, ⁵Australian Red Cross, ⁶Deakin University

OBJECTIVE

We aimed to **co-design a novel mental health intervention tailored to the specific needs of young people** in disaster-affected communities.

METHODOLOGY

A team of six youth co-researchers with lived experience of disasters (ages 17–22, diverse genders) was established. We conducted a series of online co-design workshops.

RESULTS

Crisis to Calm is a place-based, group intervention to **improve youth mental health** through psychological skills building, peer-connection, disaster resilience and creative expression.

Crisis to Calm Modules

- Module 1: Know Your Area (Disaster Preparedness and Resilience)
- Module 2: Taking Care of Yourself (Emotion Regulation)
- Module 3: Let's Talk About It! (Communication Skills and Information Sources)
- Module 4: Planning A Creative Expression Initiative
- Module 5: Putting it All into Action!
- Module 6: Reflection



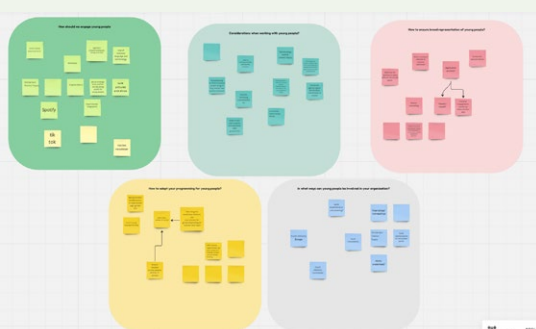
"... because young people are the ones that know how other young people think, like, they know what it's like to be that age and go through a natural disaster, and what kind of support other young people will need, as opposed to an older person trying to take a guess as to what a younger person will need."
(Youth co-researcher).



"...hearing those different perspectives definitely enhances your own perspective on certain things and so, it's been a really good experience to kind of share, okay, this is my experience with bushfires, this is the lens that I'm looking at it through. And then other individuals have different perspectives on bushfires or flooding or drought, and so it kind of gives you a more holistic perspective as well."
(Youth co-researcher).

Conclusion

Co-designing mental health initiatives with young people who have lived experience of disasters is vital to ensuring that disaster recovery programs are innovative and engaging. **Active youth leadership in disaster resilience and recovery** has potential for radical transformation of the ways in which we deliver and evaluate programs, and foster community resilience.



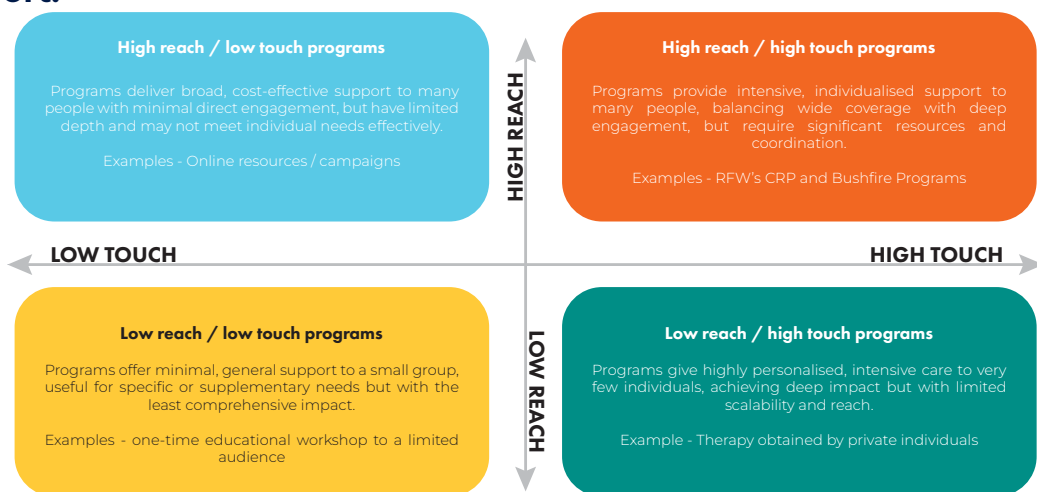
Designing for Impact

Disaster Recovery

Traditional disaster recovery programs often face trade-offs between reach and intensity of support.

Programs can be designed along a spectrum of reach and touch, with each approach offering distinct advantages and limitations. This means that some programs focus more on reaching the widest possible audience at the cost of intensive support, while others deliver deep support to very small numbers.

Balancing the need to serve many people with the need to provide meaningful, individualised support is complex, and programs must navigate these tensions to maximise both their impact and longevity.



The Royal Far West (RFW) Community Recovery Program (CRP) sought to address this challenge by adopting a high-reach / high-touch model that balances broad accessibility with intensive engagement.

Children's Groups

Educator Supports

Parent / Carer Supports

Individual Child Therapy

The CRP offers a menu of supports to provide children, families and communities affected by floods with high-quality, evidence-based support so that their resilience and wellbeing will be improved and the likelihood of long-term adverse reactions will be decreased.

The program's layered design allowed initiatives to complement each other, creating compounding benefits.

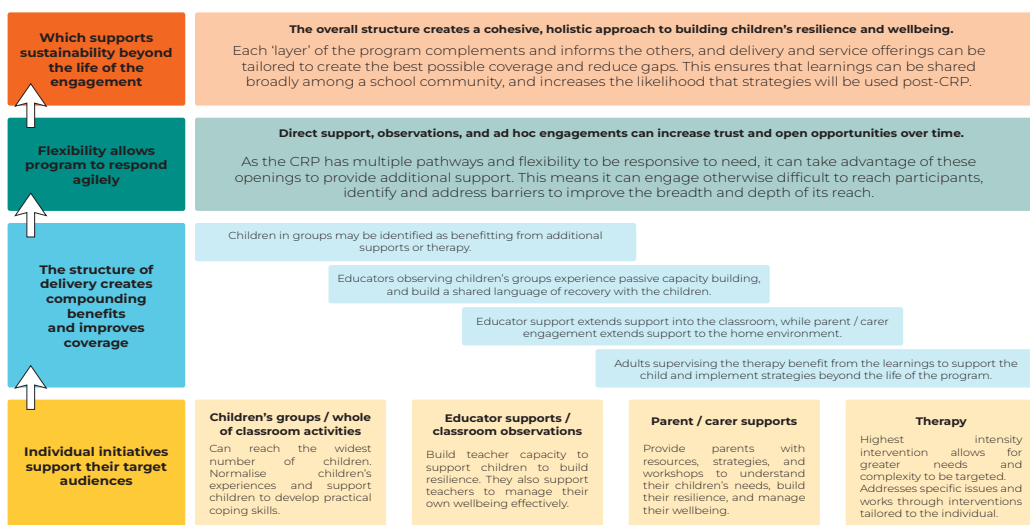
The program's flexibility is complemented by timing and duration, which enables schools to participate, and have their participation change over time. Flexibility in delivery further enhanced engagement and outcomes.

The high-reach / high-touch model demonstrated significant benefits:

- The child can be supported within their entire ecology—taking a holistic approach that includes the child, family, and school.
- The program balances individualised care with community-based approaches and the initiatives 'stack' together to support wider impact.
- This flexibility helps overcome barriers while ensuring the service adapts to the priority needs of each unique school and community.
- The CRP adapts to school needs, complements existing services, and tailors delivery methods effectively for impact.

"RFW was able to complement what was already happening at the school, while also offering additional supports and access to agencies and therapists we wouldn't normally have access to."

Primary School Teacher



Conclusion

High-reach/high-touch models like the CRP can effectively balance scalability with depth of impact in disaster recovery programs. By layering services and maintaining flexibility, such models address immediate needs while building long-term capacity within communities.

Disaster Recovery Programs

Principles for delivery through schools

Developing a set of evidence-based principles

For effective disaster recovery program design and delivery in education settings including schools and early learning settings.

Disaster response programs, especially those that target children through schools, face inherent design challenges that create a tension between effectiveness, adaptability, and scope adherence.

Complexity of disaster recovery	Pre-existing contexts and circumstances	Lack of evidence base	Complexities of delivery through schools/preschools	Difficulty engaging families
Disaster recovery requires coordination across sectors, adaptability to changing needs, and often faces inflexible funding and prolonged timelines, making it difficult to tailor interventions to local contexts.	Recovery is complicated by existing community resource depletion from past disasters, and challenges in distinguishing disaster impacts from broader social issues.	There is limited robust evidence on effective interventions, especially for children, due to difficulties in data collection, measurement, and generalising findings across different contexts.	Schools face their own recovery challenges, competing priorities, and capacity limits, which can hinder their ability to effectively deliver recovery programs.	Socioeconomic impacts, disrupted family structures, and barriers related to trauma or access can make it hard for families to participate in and sustain engagement with recovery programs.

Addressing this tension means following promising practice principles, including leveraging schools' central role in the community, building community capacity and planning a responsible exit.

The Royal Far West (RFW) Community Recovery Program (CRP) evaluation informed the development of six key principles by analysing its alignment with promising practices.

Data sources included desktop research, stakeholder interviews, and surveys with educators. The principles were refined to address challenges such as engaging schools, managing program flexibility, and ensuring sustainability.

Trauma-informed and child-centred	Programs should promote safety, calming, self-efficacy, connectedness, and hope while avoiding re-traumatisation	✓ Program design reflects recognition of impact of trauma on learning and behaviour.	<i>"We didn't want to take students out of literacy lessons which took place in the mornings and RFW was able to shift them so all therapy sessions would take place in the afternoon."</i> - Primary School Principal <i>"They listened to us ... they tailored things to what we needed and what the children needed."</i> - Preschool Teacher <i>"It was really important to be flexible...we changed delivery to be very experiential though we covered the same content."</i> - RFW Clinician
Evidence-based and data-driven	Interventions must draw on proven practices and collect relevant data to adapt and evaluate outcomes effectively.	✓ Applies proven practice - model adapted from previously proven BAP and reflects proven practices from child trauma and disaster recovery research.	
Responsive to school culture	Programs should align with institutional contexts and engage school leaders to tailor supports appropriately	✓ Includes strong initial engagement process to help school leaders identify needs.	
Strong partnerships	Collaboration with schools, families, and community organisations enhances program relevance and impact	✓ Clear partnerships that have informed development of program (e.g., Birdie's Tree, Sensory Bears, Be You, Emerging Minds)	
Flexible to emerging needs	Adaptability in timing, delivery modes, and content ensures responsiveness to dynamic disaster impacts	✓ Offers a mix of remote and in-person services to adapt to changing personal and disaster recovery contexts.	
Capacity-building for sustainability	Programs must empower educators, parents, and communities while planning for responsible withdrawal	✓ Provides resources and strategies that can be used beyond the life of the engagement.	



Conclusion

These principles provide a framework for designing effective disaster recovery programs in education settings. By embedding these practices into program design, organisations can address inherent challenges while delivering impactful support that promotes resilience and long-term recovery for children and their communities.



The Royal Far West Community Recovery Program is supported by funding from the Australian Government Department of Health and Aged Care, under the Mental Health Support for Flood Affected Australians Program

Sarah Eagland¹, Tayla Iellamo¹, Danielle Walt²

¹ - Royal Far West, AUS
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Community Preparedness |
Children and Youth Education

Empowering the future

Involving children
and young people in
emergency planning



76% of young Western
Australians want to learn more about
natural hazards and risk reduction¹.

Recent changes to the WA curriculum brings the opportunity for children and young people to engage in emergency planning.

Emergency services can help by encouraging schools and parents to involve children in their school and home emergency plans. Emergency services can answer children and young people's questions, provide information about local hazard risks, and correct any misconceptions they may have.



Scan this QR code to see the changes to
the WA school curriculum.

When we **involve children and young people** in
emergency planning, we contribute to their:

Increased community resilience

When children and young people develop the skills to prepare, prevent and respond to risks, they know what is expected and how they can stay safe. This is likely to aid recovery.

Active community participation

When children and young people are fully involved, school and home emergency plans are likely to improve. Children and young people are capable problem-solvers who can create, practice and identify gaps in emergency plans.

Improved mental health outcomes

When children and young people know 'the plan' and know the actions to take to prevent or reduce the impacts of natural hazards, their anxiety and fear is likely to decrease. Well-practised plans benefit the health and wellbeing of all the family.

The top 5 things young people in WA think they
should be learning about natural hazards and the
risk of disasters are:



64% How to plan and prepare for
natural hazards



59% How to care for themselves and
others if their community experiences
a natural hazard or disaster



58% Where to access emergency
warnings and alerts



53% The causes of natural hazards
and disasters



53% The actions children and young
people can take to prevent or reduce
the impact of natural hazards

The WA curriculum now includes:

1

How to plan and prepare for fire and natural hazard emergencies by using, developing and practising action plans for emergency situations to ensure the safety of themselves and others (Year 5-6, Health & Physical Education)

2

Skills and strategies to deal with unsafe or challenging situations by identifying and managing unsafe situations; contingency planning; skills and strategies to manage situations where risk is encouraged; managing emergency situations (Year 7-10, Health & Physical Education)

3

Where to access emergency alerts and warnings by knowing where to find reliable sources of information that inform safety decisions (Year 5, Health & Physical Education)

4

The causes of natural hazards and disasters - the causes, spatial distribution, impacts and responses to a geomorphic hazard (Year 8, Geography)

5

The actions children and young people can take - the impact of bushfires, cyclones, floods or other weather events on environments and communities and how people can respond (Year 5, Geography)



A POLICY REVIEW: POTENTIAL FOR HARMONISATION OF THE AUSTRALIAN EMERGENCY MANAGEMENT ARRANGEMENTS

The Commonwealth of Australia was proclaimed January 1901 under a federal system of government. With the Australian Constitution identifying the preservation of existing Constitutions across the six original colonies the responsibility for the protection of their citizens was retained within each State through their independent legislative powers. A number of emergency events since Federation have challenged this siloed approach.

The table below provides examples of recent hazard events with reviews held.

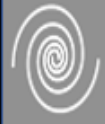
HAZARD EVENT AND IMPACTS →		→ WAS THERE A REVIEW?
	Cyclone Tracy, NT, 1974; widespread damage; 71 fatalities; \$200million insurance costs.	'The Commonwealth response to Cyclone Tracy: Implications for future disasters' (McNamara, 2012).
	Ash Wednesday Bushfires, VIC and SA, 1983; widespread damage; 75 fatalities; \$176million insurance costs.	'Report of The Bushfire Review Committee on Bushfire Disaster Preparedness and Response in Victoria, Australia, Following the Ash Wednesday Fires of 16 February, 1983' (Miller, Carter, and Stephens, 1984).
	Townsville Floods, QLD, 1998; widespread damage; 1 fatality; \$71million insurance costs.	'Townsville flood hazard assessment study. Phase 3 Report Vulnerability Assessment and Risk Analysis. Townsville City Council, December 2005' (Maunsell Australia, 2005).
	Heatwaves, VIC and SA, 2009; widespread impacts; 374 fatalities; \$unidentified insurance costs.	'The unfolding story of heat waves in metropolitan Adelaide' (Nitschke & Tucker, 2010); and 'January 2009 heatwave in Victoria: an assessment of health impacts' (Dept. of Human Services, 2009).
	Black Summer Bushfires, NSW, VIC, SA and QLD, 2019-20; widespread damage; 33 fatalities; estimates of \$10billion insurance costs.	'Royal Commission into National Natural Disaster Arrangements' (Commonwealth of Australia, 2020).

Table 1: Examples of selected natural hazard events [further detail provided through the QR Code].

What might be done:

Whilst changing legislation may be impractical, a review of policy across each jurisdiction to consider a more harmonised approach may not. Ultimately this could be more appropriate considering the increasing national risks due to the growing impacts of climate change across the identified consequence categories of people, economy, public administration, infrastructure, social setting, and the environment.

Where to from here:

Research focus will occur throughout the period commencing late 2025 / early 2026. The research team will take a grounded theory approach and seek a number of representatives from peak emergency management bodies within each jurisdiction to participate to identify current policy in relation to considering if a harmonised approach to the Australian Emergency Management Arrangements could present benefits.



1901
FEDERATION

Issues identified:

- Despite countless significant emergencies and reviews into these events identifying recommendations for improvement Australia remains with disparate emergency management arrangements, with no two jurisdictions capable of reflexive integration of resources.
- Whilst there have been some changes individual legislation remains extant with each jurisdiction operating within different emergency management environments, with a limited national coordination approach.

How to get involved!



Researcher:

Brad Slater, as a PhD Candidate at Edith Cowan University, and Associate Student with Natural Hazards Research Australia, will lead the research project and would be happy to hear from you.



Preventing bystander drowning through community co-design of public rescue equipment (PRE) in Venus Bay, Victoria

Grace Strugnelli¹, Adjunct Associate Professor Bernadette Matthews^{1,2}, Paul Hoffman³

¹Life Saving Victoria; ²Monash University; ³Venus Bay Surf Life Saving Club

Scan the QR code to view the project webpage.



Local community and stakeholder involvement at every stage

Place community at the centre

Global evidence review; drowning data analysis; risk assessments; community forums

Understand the context

Community Engagement Principles for Disaster Resilience¹

¹Community Engagement for Disaster Resilience (AIDR 2020).



Developing the PRE infrastructure through community co-design has provided assurance to the community in the risk reduction action taken and supports long-term ownership of the initiative. This trial serves as an important precursor toward broader PRE implementation across other high-risk waterways.



Scan the QR code to see how the PRE helped save six lives in eight days.

Intervention tailored to local needs and diverse groups via rigorous research and development

Recognise complexity

Components integrated in official emergency processes

Work in partnership

Awareness campaign and local media; onsite surveys, focus groups, and interviews

Communicate respectfully and inclusively

Community education sessions; local-led PRE station auditing; monitoring and evaluation

Recognise and build capability



Life Saving Victoria acknowledges CartGIS as the owner of the call button technology. Public awareness components of the project funded by the Andrews Foundation. The Beach Drowning Blackspot Reduction Program is funded by Surf Life Saving Australia with support from the Australian Government.

Tailoring evaluation approaches to organisational requirements

Author: Dr Debra Hopkins, Program Evaluation Specialist, CFA.



Setting the Scene: Organisational Context

Quality risk management is key to meeting the challenges of enabling community safety in a changing climate, demographic shifts and a constrained fiscal environment. CFA is a key player in emergency management in Victoria delivering myriad bush/ grassfire, residential, property fire preparedness initiatives by raising awareness and supporting risk awareness and personalised fire preparedness.

These initiatives variously address community needs and participation ranging from one way provision of risk information and service to individuals and communities, to community-centred and led programs, where community engagement plays a central role. It follows that demonstrating the benefit of these initiatives requires tailored rather than standardised approaches.

CFA is keen to demonstrate the benefits of our initiatives, by tracking how and where our initiatives are delivered to communities. Demonstrating the benefits is challenging for a range of reasons. Key reasons include:

- monitoring data can only tell us part of the story
- there are diverse perspectives about the value of the program and its potential/likely impact on the communities served
- resourcing does not always support reliable and accurate information gathering from communities
- different CFA regions prioritise different initiatives, resulting in unique regional patterns of delivery
- CFA as a volunteer led organisation is experiencing challenges in sustaining the workforce to deliver initiatives
- initiatives invoke myriad stakeholder perspectives and requirements.

Demonstrating social, cultural and behavioural change is hard!

(Davidson and Chanca, 2025, p39).

Evaluation frameworks often use rigid methodologies, which may overlook the nuanced shifts in community behaviour and preparedness. Sometimes the changes that we rely on to enable an initiative to do its work don't require active behavioural change on the part of end beneficiaries. In such cases the changes may be social, cultural or organisational in nature.

Why This Matters

These program factors present challenges for determining the value of these initiatives, and for measuring value. Other factors external to the delivery combine so that it is only possible to deliver partial and fragmented insights into community preparedness and how these initiatives support community preparedness.

An Alternative Approach

Exploring adaptive frameworks, such as **rubrics**, can provide a more comprehensive understanding of program benefits. Rubrics allow evaluators to capture diverse outcomes and key performance indicators tailored to the unique challenges faced by programs like those run by CFA.

Measuring the Value of Programs and Services: A Contested Area

Organisations often fall back on using standardised approaches to demonstrating the benefits and value of their work. One common approach is the OECD-DAC outcomes framework, or variations. This approach usually looks like this:

1. **Relevance:** is the intervention doing the right things?
2. **Coherence:** how well does the intervention fit?
3. **Effectiveness:** is the intervention achieving its objectives?
4. **Efficiency:** how well are resources being used?
5. **Impact:** what difference does the intervention make?
6. **Sustainability:** will the benefits last?

(OECD, n.d.)

The Limitations of This Approach

Relying on these frameworks may eclipse important elements of community preparedness work in our communities, and its value. They can inhibit us from asking important questions about what we want the program to do, and the changes that we see, or want to see.

'Are all outcomes of equal value?'
'What makes a program, or a service good?'
'Does a demonstrated program outcome necessarily make the program good?'

Contrast the table above, with the table below. The table below represents a different approach to thinking about how actions or outcomes are good, desirable, or permissible, while others are bad, undesirable, or impermissible. These are called **normative perspectives** and fall into different categories.^{1, 2} They work as application of practical wisdom that is central to deciding what is the right thing to do in a particular situation.

Consequences are what is important	Dutifully following rules, and meeting obligations is what is important	Adhering to rights-based directives, e.g., as enshrined in legislation, law, treaty	Being fair and equitable is what is important	Having an ethic of care is what is important
Outcome = Maximising benefits	Outcome = Accountability and meeting obligation	Outcome = minimum protection	Outcome = equity and social justice	Outcome = relationships & context
Interest group 1	Dimensions of value			
Interest group 2				
Interest group 3				

Adapted from Roorda, 2019

¹ The table is adapted from original work for submission of a PhD thesis undertaken by Roorda, C., Roorda, M., & Gullickson, A. M. (2019). Developing evaluation criteria using an ethical lens. *Evaluation Journal of Australasia*, 19(4), 179-194. <https://doi.org/10.1177/1035198X19898991> (Original work published 2019).

² The coloured shading of the columns relates to the three categories of normative perspective in western moral philosophy: Consequentialist, Deontological perspective, and Virtues. More information about normative perspectives can be found in Grayling, A.C. (2020) *The History of Philosophy: Three Millennia of Thought from the West and beyond*. Penguin, Random House UK.



Surfacing Stakeholder Values Using Normative Perspectives as a Foundation for Developing Evaluation Criteria

At CFA we have trialled using rubrics to evaluate a residential smoke alarm service that addresses the risk of preventable residential fires in high-risk locations and populations.

What is Rubric Evaluation?

Criteria	Standards		
Aspects by which we determine the program is good / bad, valued / not valued, successful / unsuccessful	Organised by degree of goodness/quality. Description of what are we looking for at each level. What indicators and types of evidence will demonstrate performance at each level?		
	Standard 1 (e.g., Exceeds)	Standard 2 (e.g., Meets)	Standard 3 (e.g., Doesn't meet)
Evaluation Domain 1	Indicator 1 Indicator 2 Indicator 3...	Indicator 1 Indicator 2 Indicator 3...	Indicator 1 Indicator 2 Indicator 3...
Evaluation Domain 2	Indicator 1 Indicator 2 Indicator 3...	Indicator 1 Indicator 2 Indicator 3...	Indicator 1 Indicator 2 Indicator 3...

Why Rubrics?

"We all have different priorities in life and different sets of values with which we make judgements on things around us."

(BetterEvaluation, n.d.)

We need to base our evaluation practice on this understanding if we want our programs to count.

Rubrics supports systematic data collection, analysis and synthesis, facilitating the reliability and validity of judgements and recommendations made.

Rubrics:

- help with surfacing and signifying stakeholder values
- demonstrate the importance of surfacing values in program design, implementation and reporting
- assist organisations to prioritise learning and improvement
- facilitate systematic analysis and synthesis of different types of data and evidence
- provide transparency around judgements of how an initiative is performing over time
- provide a consistent narrative about performance where there is a mandate or legislative requirement to comply.

Rubrics are useful in complexity and uncertainty. They are a living document which can be further developed and nuanced over time.

(Davidson and Chanca, 2025; Wehipehena et al, 2019)

Applying Rubrics to a Community Fire Preparedness Service in CFA

The Smoke Alarm and Installation Service (SAIS) is a residential advice and installation service conducted by CFA volunteers and casual employees involving visits to targeted homes and residents deemed to be at higher risk of experiencing a residential fire.

Factors putting them at higher risk from residential fire are:

- **demographic characteristics** including age, physical and mental capability, and cultural linguistic capabilities including but not limited to English language proficiency
- **geographical location** to target areas with higher proportion of people from these at-risk demographics at (using VFRR-S risk data).

Unlike many programs and services delivered to communities, SAIS must demonstrate compliance with legislative mandates. We are starting our journey with rubrics by asking a formative question:

"What needs to be in place for the installation service to benefit our workforce and end users?"

We came up with a few key points including:

1. The regional CFA workforce needs to believe that the initiative is worth prioritising
2. CFA needs to meet legislative requirements, so CFA workforce needs to be appropriately trained
3. CFA must use constrained resources to target those most at risk
4. CFA must keep its workforce safe and respect residents' privacy and wellbeing homes.

Accordingly, we decided that cumulatively these are hallmarks or indicators of a quality residential smoke alarm installation service. Quality became one of our key evaluation domains and our 'pilot' into using rubrics in our evaluations.

We have used rubrics in conjunction with a standardised evaluation framework to start the journey of incorporating rubrics into CFA evaluation practice. This approach will enable CFA to adapt to the change in evaluation practice, get early engagement and interest on a small rather than a blanket change.

Key evaluation Criteria	Standards		
Aspects by which we determine the program is good / bad, valued / not valued, successful / unsuccessful	Organised by degree of goodness/quality. Description of what are we looking for at each level. What indicators and types of evidence will demonstrate performance at each level?		
	Standard 1 (e.g., Exceeds)	Standard 2 (e.g., Meets)	Standard 3 (e.g., Doesn't meet)
QUALITY DOMAIN 3 indicators of quality are:	Compliance Indicator 1 Compliance Indicator 2 Compliance Indicator 3...	Compliance Indicator 1 Compliance Indicator 2 Compliance Indicator 3...	Compliance Indicator 1 Compliance Indicator 2 Compliance Indicator 3...
• reach			
• workforce capability			
• workforce capacity			

Outcomes and Learnings From the CFA Experience So Far

We are at the formative stage of reviewing our data – both primary and secondary – to identify emerging insights about the SAIS design and implementation, gaps and learning and improvement opportunities. While not ready to share full findings, we can offer early learnings about the SAIS program and the evaluation process.

Key Insights

- The workforce across the regions is using different strategies to select the residences that they visit.
- Some districts are prioritising *maximising benefit* by installing as many alarms as they can rather than prioritising equity and social justice (by targeting those homes without the capability to self-install and maintain alarms)
- In some areas local networks and the knowledge held around the community is driving targeting of residences and residents, rather than more formal risk data, suggesting a priority on the value of *relationships and context*.
- Secondary data demonstrates that CFA home visitors understand the importance of meeting legislative requirements, similarly respecting residents' privacy and self-determination.
- To date, CFA has not prioritised capturing community feedback. Accordingly, consultation with residents of homes visited is progressing in July 2025.

Surfacing the existence of different value perspectives and how this reality informs program delivery has been an important and fascinating finding. How CFA responds to this finding is critical. According to standardised program evaluation approaches, a demonstrated deviation from program fidelity (not delivering the program as intended) would register a black mark against the program. However, by using rubrics we have kept the door open with a spirit of inquiry to understand not only the existence of this insight, but its significance.

Next Steps

Based on further consultation CFA will:

- set performance standards that are fit for purpose and are
- based on the unique characteristics of CFA regional community preparedness culture and practice.

This will enable us to make defensible judgements of value, merit and significance about the first eighteen months of SAIS across Victoria.

Starting the Rubrics Journey

We have used a structured approach to bring rubrics into the work that we do by:

- starting small and building momentum
- opt-in piloting and gradual rollout
- smart capacity building
- getting buy-in to a specific problem and solution rather than replacing the entire system
- working with expert allies
- getting excited and innovative

(adapted from Davidson and Chanca, 2025)



Interested in exploring rubrics further?
Find our recommended reading list here

Dr. Debra Hopkins acknowledges the contribution of Janetia Mascilongo (Independent Evaluation Consultant) who supported the development of this poster. Thanks also to CFA colleagues Patrice Higgins, Fiona McKinnon, and Andrew Beech-Jones for feedback on the poster. Thanks too to Annie Madnes from Annieworks for her professional graphic design services in the production of this poster.

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LESSONS FROM A COMMUNITY-BASED DISASTER LEARNING REVIEW



Aerial firefighting aircraft at Tenterfield Aerodrome, 2023. Source: Rob Evans



Water tank and fire truck, Tenterfield Aerodrome, 2023. Source: Rob Evans

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SPECIAL THANKS

The authors wish to gratefully acknowledge the Tenterfield community members, Fire to Flourish Tenterfield team members Helen Duroux, Matt Sing and Gina Carpenter, as well as Fire to Flourish research team member Scott Campbell-Smith.

WHAT WE DID

In October to November 2023, the town of Tenterfield, NSW, was impacted by significant bushfires. Fire to Flourish was invited by local residents to conduct a community-based disaster learning review. We worked together to identify what worked well and what didn't - before, during and after the bushfires. Tenterfield community members then allocated funding to projects that are now helping strengthen their disaster resilience.

HOW DID WE DO IT?

We applied the Fire to Flourish Community-Based Disaster Learning Review approach. This included bringing together community advisors, hosting four community workshops, and conducting interviews with people affected by the bushfire or involved in preparedness, response and recovery.

The process identified community priorities for strengthening Tenterfield's disaster resilience. These priorities formed the basis for a call-out for project proposals. A community decision-making group assessed the proposals and selected eight to be funded with a total of \$200,000.



Tenterfield community decision-making workshop participants

WHAT HAVE WE LEARNED?

WHAT DID AND DIDN'T WORK WELL

- The community were proactive and showed immense strength and care for their landscape and community.
- The bushfires magnified existing challenges, including inadequate recovery from previous disasters and the need for greater social cohesion and trust.
- A lack of coordinated community disaster preparedness meant that evacuation, communications and mental health support did not meet community needs.

COMMUNITY PRIORITIES FOR ACTION

- Priority 1: Collaborative, collective and inclusive community disaster response and recovery planning.
- Priority 2: Caring for ourselves and our neighbours.
- Priority 3: Caring for our natural environment.
- Priority 4: Caring for our local economy.
- Priority 5: Collecting data on disaster impacts.

Community-led resilience in action: Friends of Tenterfield Aerodrome

FOTA are aviation enthusiasts who took over the management of Tenterfield Aerodrome. They worked to upgrade the facility to support local tourism, medical evacuation and bushfire response. Installed a 210,000 litre water tank that enabled safer, faster and more efficient firefighting. This is an example of the power of community.

LEARN MORE



Fire to Flourish is led by Monash University, with cornerstone investment from philanthropic partners, the Paul Ramsay Foundation and Metal Manufactures Pty Ltd. Additional philanthropic funding is provided by the Lowy Foundation.



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ELECTRICAL
MERCHANDISING

THE
AUSTRALIAN
CENTRE FOR
SOCIAL
INNOVATION



Co-designing emergency communications with multicultural communities in regional Victoria

Background

Multicultural communities in regional Victoria have experienced greater risks and harms during natural disasters like bushfires and floods.

Research Objectives

To better understand emergency communication needs of multicultural communities in regional Victoria.

To co-create resources to support more equitable outcomes for multicultural communities during emergencies.

Methods

We partnered with North East Multicultural Association to conduct 3 participatory workshops with 16 participants including:

- Multicultural community members
- Staff and volunteers
- Emergency service providers

Workshops involved small group activities that explored:

- Perceptions of emergency resources
- Key messages to share
- Information sharing preferences

Researchers synthesised workshop content and presented it back to participants iteratively.

Results

Our participatory study identified the most effective ways to share information with multicultural communities to support emergency preparedness.

Preferences for sharing emergency information in audio/visual format include:

- Focus on positive outcomes
- Give clear advice
- Messages from real people

"Connect to the local radio channels, social media, and reach out to local services."

(Community member)

Community-led Resources

Guided by results we created 'Ready Together', a video series empowering multicultural communities in regional Victoria to Stay Together, Learn Together and Plan Together for emergencies using personal stories and practical tips.

Watch and share the videos now



"Knowing that this might happen and knowing how to deal with it ... have an emergency kit ready in your place before anything happens"

(Staff member)



"People need support. They may not know what 'emergency kit' means but if they can go next door and ask the neighbour what does this mean?"

(Community member)

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Funded by Emergency Recovery Victoria



Designing for Safety: A Human-Centered Design conceptual model informing future Wearable Technology

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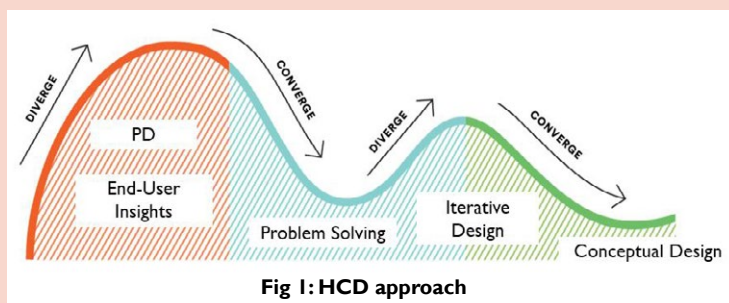
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Background

Efforts to design wearable technology for firefighters often fall short due to the lack of a Human-Centered Design (HCD) approach, which fails to involve end users early in the process. This gap frequently results in devices that do not adequately address the real-world needs of firefighters, compromising wearability, user trust and confidence [1].

HCD is an approach to problem-solving and innovation that prioritizes the needs, lived experiences, and perspectives of the people for whom the solution is intended [2].



According to literature, firefighters who are early in their early careers (firefighter trainees) prone to face most of the occupational injuries compared to career firefighters [3].

Heat risk has identified as the main reason for most of the occupational risks and injuries. The literature identifies wearable sensor technologies (WST) as a viable solution for real-time heat risk monitoring in firefighter training [4]. However, existing devices have their own limitations in heat risk monitoring.

Significance

Firefighter trainees face high heat-related risks that can impact long-term health, careers, and retirement. This study uses a human-centered design approach to gather safety insights from firefighting community considering safety as a fundamental element.

These insights will inform the development of wearable heat risk monitoring technologies, aiming to improve critical yet understudied design elements like wearability, user trust, and confidence.

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Preliminary Findings

Global Problem



NFPA reported fatal injuries hike in 2022

Volunteer firefighter injuries > than career firefighters



Main cause for injuries is overexertion / heat stress (51%)

Preliminary review findings highlight a gap in research on firefighter trainees' safety experiences during training, particularly in relation to heat risk.

This conceptual model highlights the need to consider the interaction between end-user, technology, and environment focusing on factors such as size, weight, sensor accuracy, form factor, placement, fit and comfort in WST design.

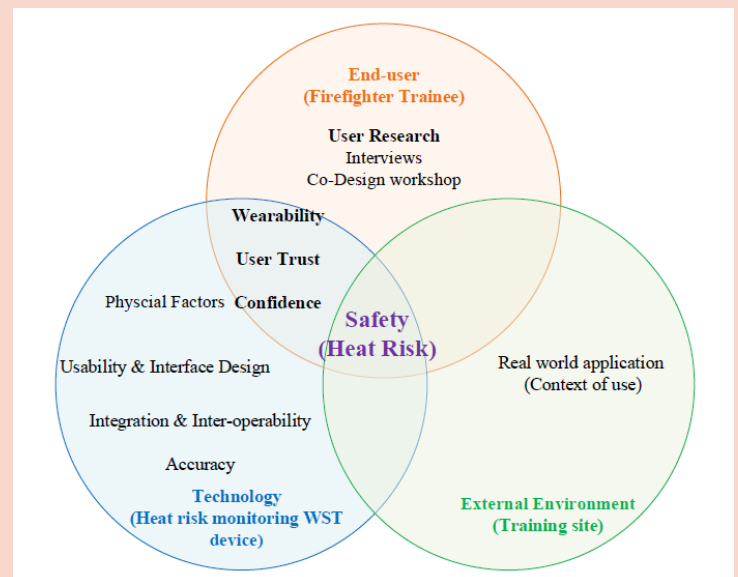


Fig 2: Conceptual model informing the development of wearable technology for heat risk monitoring

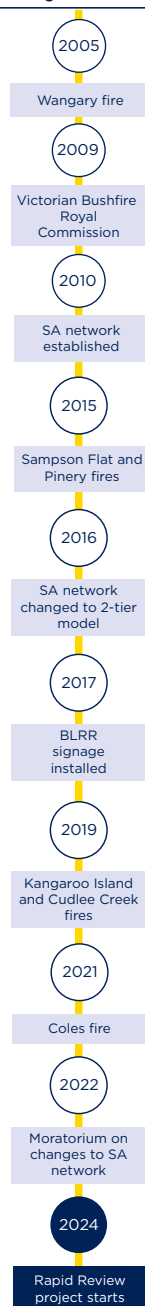
Future Work

These findings will be further validated by real end-users by conducting interviews and co-design workshop.

Where will you go?

Bushfire Safer Places and Bushfire Last Resort Refuges in South Australia.

Key dates



An often missed step in bushfire preparedness

In November 2024, the South Australian Country Fire Service (SACFS) commenced a rapid review of existing Bushfire Safer Places (BSPs) and Bushfire Last Resort Refuges (BLRRs) across the state. This statewide network of designated locations was developed in 2010 following the 2009 Victorian Bushfire Royal Commission and devastation from the SA Wangary fire in 2005.

Implementation of this network was delegated to the SACFS as the rural fire hazard leader in collaboration with local councils; however, no reviews have occurred to ensure that designated BSPs and BLRRs sites remain suitable for community safety.

In the time since, the state has experienced multiple devastating bushfires, including Pinery and Sampson Flat (2015), Kangaroo Island and Cudlee Creek (2019), and Coles (2021). Post Pinery and Sampson Flat fire reviews led to the installation of signs for BLRR locations, and demonstrated the functionality of BSPs and BLRRs impacted by these fires.

This rapid review project was designed to address this critical public safety issue due to serious concerns shared by the SACFS, local councils, the State Government, and the community.

Major concerns



Liability



Land use changes



Community safety



Urban growth



Lack of awareness



No regular review

By the numbers

7,665 kms

by car



492 kms

by air



670 hrs

GIS mapping



30 days

travelling



2 staff

members



186

Bushfire Safer Places

95

Bushfire Last Resort Refuges

432

Bushfire Last Resort Refuges signs



Bushfire Safer Places

Designated areas of relative safety due to urban characteristics and distance from continuous vegetation.

Assessment:

- Desktop GIS (QGIS) mapping and radiant heat flux simulation (INFERNO)
- Vegetation classified as per AS3959: 2018
- Maximum radiant heat threshold: 7.5 kW/m² at boundary.



167 Bushfire Safer Places can be expanded

19 new Bushfire Safer Places identified

BSPs remain compliant with original boundary



Bushfire Last Resort Refuges

Provides a minimum and temporary level of protection from the immediate life-threatening effects of radiant heat.

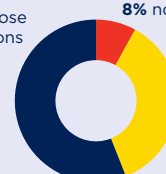
Assessment:

- Site visits and field measurements
- Maximum radiant heat thresholds: open spaces (2kW/m²), buildings (10kW/m²)
- Deemed as fit for purpose, fit for purpose with modifications or not fit for purpose.

56% fit for purpose with modifications

8% not fit for purpose

36% fit for purpose



Bushfire Last Resort Refuge signage

To provide clear direction and identification of sites during an active bushfire in the area.

Assessment:

- Confirm correct location and sign type
- Identify remediation work required.

40 are damaged

9 extra signs recommended

16 are missing

8 require removal

21 to be relocated

24 require vegetation management

2 are incorrect type

Recommendations summary

1

Implement urgent actions to confirm suitability of current sites.

2

Update public information and renew community education campaign.

3

Review assessment methodology to ensure it reflects best practice.

4

Make the assessment process clearer and easier to understand.

5

Create policy documents to support sites management.

6

Set up a central database to monitor sites.

7

Establish formal agreements with key stakeholders.

8

Include regular site reviews in the relevant legislation.



Read more information here:

cfs.sa.gov.au/bushfire-safer-places

What and Why Counts as 'Safe Enough'

A PHILOSOPHICAL LOOK AT FIRE RISK MANAGEMENT



Ethics in the Flames

A SHORT ABSTRACT Fire risk management is often seen as a matter of technical precision and operational efficiency. Yet this framing overlooks the profound ethical questions at its core that are exemplified at this poster.

This field is undergoing a quiet but necessary transformation. While the ethics of healthcare or road safety are widely debated, fire risk management has remained largely untouched by systematic ethical inquiry. That's beginning to change.

By introducing philosophical reflection, particularly through an approach known as engaged philosophy, we can begin to reframe fire risk not just as a technical or economic challenge, but as a domain of moral and political judgement. This includes questions of justice, shared responsibility, and the ethical standing of non-human life.

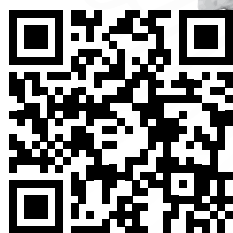
This is not about adding abstract theory to practice. It's about clarifying the values already at play and making room for more inclusive, transparent, and context-sensitive decisions.

Who and what gets saved?
Who gets what and why?
What does 'safe enough' imply?
Whose job is it, really?
Who gets a say in staying safe?

- Whose or what fire safety matters most when fire strikes?
- How are fire safety resources really distributed?
- What counts as acceptable protection and for whom?
- Where does responsibility really lie?
- Whose voices shape fire safety decisions?

DILEMMA

- | | |
|--|---|
| A commercial precinct gets retrofitted with sprinklers after lobbying. | A school for disabled children barely passes fire inspection. |
| Evacuation plans prioritise human life but not pets. | Owners risk their lives to stay behind. |
| High-income areas get community fire briefings. | Low-income areas receive leaflets. |
| A care home's escape plan fails. Staff say they were never trained. | The manager blames budget cuts imposed by the local government. |
| Livestock and pets are rescued. | Wildlife and ecosystems are sacrificed. |
- Residents in high-rise flats raise alarm about cladding, years before a deadly blaze (Grenfell Tower).



Read more.
Reflect further.
Scan here.



Brandforsk is a donation-funded foundation whose research school bridges academia and the fire and rescue services. It aims to both advance knowledge and translate research into practice, creating opportunities to identify critical issues and shape real-world outcomes. This research is co-funded by Brandforsk through their research school for PhD studies in collaboration with Södertörn Fire and Rescue Service (SBFF) and KTH Royal Institute of Technology in Sweden.



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Fancy a philosophical spark?
Let's ignite a conversation!

MATEUSZ SOSNOWSKI
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BACHELOR OF SCIENCE IN FIRE PROTECTION ENGINEERING
MASTER OF SCIENCE IN RISK MANAGEMENT AND SAFETY ENGINEERING



SCAN THE CODE TO CALL ME DIRECTLY OR SEND A THOUGHT-PROVOKING EMAIL LATER.



Natural
Hazards
Research
Australia

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UNIVERSITY of TASMANIA

Understanding conflict in disaster recovery collaborations

Danielle O'Hara ¹

¹ PhD student, School of Political Science and International Studies, University of Queensland

What causes conflict between agencies working together in recovery?

In disaster recovery, collaboration between different agencies, including levels of government and NGO's, is essential. Yet working together can be difficult and is often characterised by conflict. This research investigates the causes of conflict so it can be managed more effectively.

Background

Despite being touted as a "magic bullet" for addressing complex societal issues like disaster recovery, collaborative partnerships can be fraught with challenges and conflict. Paradoxically, collaboration can increase the potential for conflict by bringing together organisations with divergent interests, knowledge, practices, and values to contribute to decision-making. Conflict can be constructive. However poorly managed conflict can stall decisions, cause harm, and lead to the community missing out on funding, resources or support.

Methodology

Semi-structured interviews were conducted with 38 recovery practitioners from five Australian jurisdictions. Participants were concentrated in areas that had experienced recent or frequent disasters. Participants represented diverse organisational types: local government, state government, local NGOs and community organisations and large national NGOs. Many had worked for various organisations in recovery.

Participants were asked about their experiences of conflict in recovery collaborations before, during and after disasters, and to take an 'organisational perspective' that did not limit responses to specific events or individual grievances. Each participant was asked to describe how eight categories influenced the conflict they described. The categories were based on conflict analysis and existing disaster recovery research.

Selected findings

The research found that recovery workers have a shared goal of supporting the community and a deep commitment to collaboration.

However, four interrelated primary factors cause conflict within disaster recovery collaborations:

- Perceived value differences.
- The structure of the recovery system, including governance, role clarity and funding.
- Organisational interests, including organisational reputation and survival.
- Relational dynamics, including history and stereotypes.

Workers from different types of organisations described similar causes of conflict, but from different perspectives.

Some of these factors exist pre-disaster, while some are exacerbated by the complex environment and stressful nature of working in recovery.

Next steps

Based on this research, tools will be developed for disaster recovery practitioners to better understand conflict in their collaborative relationships.

Future research will investigate how conflict in disaster recovery collaborations can be better managed.



Further information

For additional information scan the QR code or contact:

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Optimisation might help us to improve fuel treatment planning by over 250%

Douglas Radford¹, Professor Holger Maier¹, Hedwig van Delden^{1,2}, Dr Aaron Zecchin¹, Dr Amelie Jeanneau¹

¹ Faculty of Science, Engineering & Technology, The University of Adelaide

² Research Institute for Knowledge Systems, The Netherlands

Optimising Fuel Treatment Plans to Achieve Bushfire Risk Reduction Objectives

How can we develop fuel treatment plans that best achieve the objectives of communities and managers? This project demonstrates the application of formal optimisation approaches to identify fuel treatment plans that best achieve bushfire risk reduction objectives.

The Challenge

Deciding how to reduce bushfire risk is a challenging decision-making problem. Communities and agencies must identify objectives and choose where across large landscapes they will undertake fuel treatment activities that might reduce fire spread (e.g., prescribed burning). This decision is made more difficult due to constraints associated with limited budgets, time and resources.

Optimisation Approaches

Optimisation tools are incredibly powerful for exploring this type of problem. They can search through many thousands of possible decisions to identify those solutions that best achieve a set of objectives subject to any constraints. Unfortunately, the use of optimisation has been limited as optimisation requires thousands of simulations be undertaken with traditionally expensive “burn probability” (BP) models.

Can Optimisation Help?

Artificial Intelligence & ‘Metamodels’

To make possible the application of optimisation, we have developed ‘metamodels’ to estimate BP outputs in a fraction of the computational time required by traditional simulation models (see Radford et al. (2024) and Figure 1).

Performance of Optimised Treatment Plans

Metamodels allow us to undertake optimisation using multi-objective evolutionary algorithms. Our optimised fuel treatment plans performed between 80 and 280% better than typical treatment plans, depending on the objectives considered.

Future Work

While this work shows promise for informing how we can plan treatments, it underlines the importance of how we define objectives when making these decisions. More data & real-world validation of models with end-users is needed.

Related Publications

Radford et al., 2024. Predicting burn probability: Dimensionality reduction strategies enable accurate and computationally efficient metamodeling. J. Env. Man. 10.1016/j.jenvman.2024.123086.

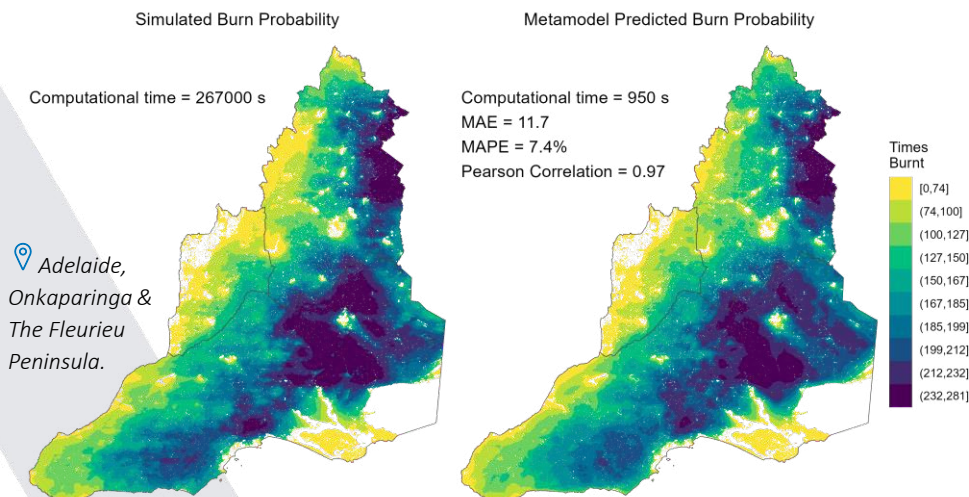


Figure 1. Burn probability (BP) maps are often used to evaluate fuel treatment plans while planning. BP maps can be efficiently & accurately estimated using metamodels. This makes it possible to use optimisation approaches that test thousands of unique fuel treatment plans.



Further information

For additional information or to get involved, scan the QR code or contact:
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Identifying community preparedness gaps for effective emergency planning

Sara Fazeli¹, Prof Taha Rashidi¹, Assoc. Prof Moe Mojtahedi², Assoc. Prof Milad Haghani³

¹ Research Centre for Integrated Transport Innovation, School of Civil and Environmental Engineering, The University of New South Wales

² School of Built Environment, The University of New South Wales

³ Centre for Spatial Data Infrastructures and Land Administration, The University of Melbourne

Developing and validating self-assessment scales for measuring community preparedness in response to flood and bushfire emergencies

Measuring community preparedness is essential before implementing strategies to enhance it. Understanding the existing level of preparedness and identifying weaknesses are key to developing a tailored plan that meets the community's specific needs (Fazeli et al., 2024).

Introduction

Community preparedness is crucial for reducing the impact of disasters. As we know natural hazards escalating in recent years due to climate change and other factors, leading to substantial economic losses, environmental destruction, and human casualties. While we cannot prevent these events, we can learn from them. Training and education empower individuals to make informed decisions and respond effectively during natural hazards. This research aims to develop and validate self-assessment scales for measuring community preparedness in response to floods and bushfires, assisting people in understanding and mitigating risk.

Methodology

To measure the current level of preparedness, surveys were designed as self-assessment tools covering various aspects, including knowledge, attitude, psychological preparedness, action preparedness, risk perception and willingness to drive in floods and bushfires. Extensive stakeholder engagement was conducted, and feedback from practitioners and emergency experts was incorporated into the survey design. The Data were collected from residents across all

states of Australia, and exploratory and confirmatory factor analyses were conducted to validate the scales and identify key factors influencing preparedness.

Findings and discussion

Figure 1 illustrates the flood and bushfire preparedness scales. The flood preparedness scale (Figure 1, left) includes four factors: local risk awareness, self-efficacy, action plan, and vehicle safety. The bushfire preparedness scale (Figure 1, right) also comprises four factors: response efficacy, action plan, social support, and vehicle safety.

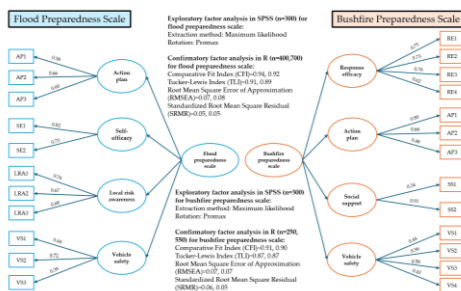


Figure 1: Flood and bushfire preparedness scales

Most participants consider themselves well-prepared regarding vehicle safety for flood emergencies. However, their main concerns

and weaknesses lie in local risk awareness, particularly in knowing the best shelters and routes in their neighbourhood to avoid floods.

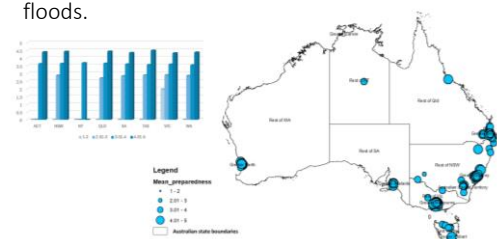


Figure 3: Flood preparedness levels of Australian residents

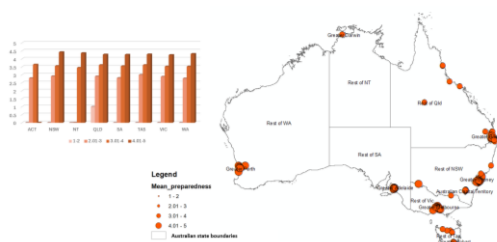


Figure 2: Bushfire preparedness levels of Australian residents

For bushfire preparedness, participants report feeling more confident in aspects related to social support. However, their perceived abilities are lowest in the action plan domain, which includes knowing the best shelters for bushfires, having emergency food and resources, and managing flammable materials around their properties.



Further information

For additional information scan the QR code or contact:

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Preparation for Disasters

Amanda Muller & Jyoti Khadka - DDR Grant - CFS, SES, LGA, ARC supported

- 1 Can all households do disaster preparation tasks?
- 2 What tasks are more difficult to do?
- 3 Are some disasters more difficult to prepare for?
- 4 What factors influence preparation?

The project investigated household ability to prepare for different disasters, from ratings and commentary (n=360). The questions were developed collaboratively with industry partners using their public emergency preparation advice.

Findings

- 1 People can **accurately self-rate** their “capacity to do preparatory activities in general”. This was verified statistically.

- > A very able 10% form the top outlier group.
 - > Most have ability levels on par with task difficulty levels.
 - > About 16% ($\log < -0.6$) are challenged by top 25% tasks.
 - > A bottom 4% find most preparation tasks impossible.
- The top household 1,000 times more than able than lowest.

- 2 Task difficulty is mostly on par with household ability.
- Tasks are 7 times more difficult at the top end of the scale.

- 3 Less difficult disasters are heatwave, storm/high winds.
- More difficult disasters are drought, flood and earthquake.
- Bushfire spans the full range of preparation difficulty.

- 4 Factors uniquely **decreasing** preparedness:

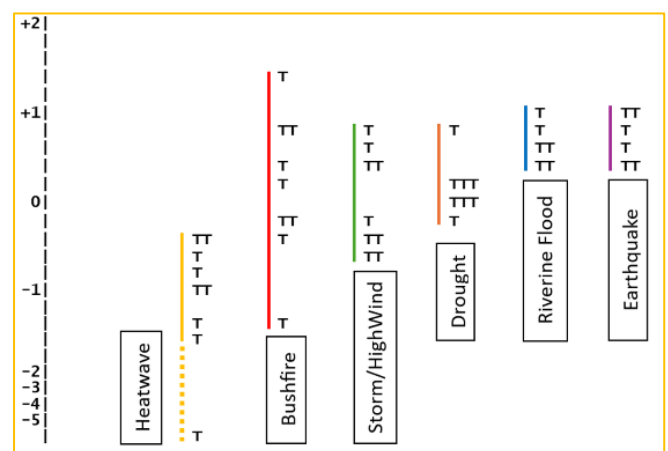
- > Pet and animal ownership.
- > Access to advice/info/skills about how to do it.
- > Physical independence or mobility issues.
- > Born in Australia.
- > Time, money, and emotion had a small negative effect, but not as much as anticipated.

Specific issues associated with heatwave, bushfire, and flood: temporary relocation and movement of people and animals. People sometimes didn't know the 'how' to help themselves. People said carer duties and worry impeded them. Lack of warning and low estimated risk meant complacency.

What does this mean?

- > Most households can somewhat prepare, but 4% cannot.
- > Public space provisions needed for both pets and animals.
- > Consider mobility impairment (person/transport).
- > Support for tasks requiring physical and skilled actions.
- > Educational sessions for knowledge/skill gaps.
- > Address conflicting advice given between disasters.
- > Motivate the Australian-born population.
- > Carefully balance information about urgency and consequences – people underestimate both.

Household preparation may be impeded by landlord restrictions, housing type, and council regulations.



1.4	Bushfire	fill/cover gaps - embers might enter home
SD 1.0	E'quake	secure top-heavy furniture/appliances
	E'quake	install latches on cupboards
	Flood	lay sandbags properly
0.8	Bushfire	clear flammable vegetation around home
	Drought	install instant hot water heater on sink
	Bushfire	clear fine fuels from gutters and around home
	Storm	trim trees that could fall on property
	Flood	temporarily move residence out of flood area
	E'quake	strap water heaters correctly to wall
0.6	Storm	disconnect electricals and external aerials
	Flood	stack possessions high on tables and benches
	Flood	secure objects likely to float/cause damage
	E'quake	store heavy or fragile items on bottom shelves
0.4	E'quake	interior wall away windows/furniture/fireplace
	Flood	put emergency kit in waterproof container
	Flood	move waste containers/chemicals off floor
	Storm	check roof is in good condition
	Storm	reinforce and secure windows
	E'quake	store flammable/hazardous items lower/floor
	Bushfire	clear ignition points outside: furniture/tank
0.2	Drought	purchase water efficient appliances
	Drought	install water efficient irrigation devices
	Storm	clear gutters, downpipes, drains
	Drought	ensure home free of water leaks
M 0.0	Drought	use mulch to retain moisture in soil
	Drought	repair dripping faucets/replace washers yearly
	Drought	plant native/drought-tolerant plants/trees
-0.2	Bushfire	leave to safer place on catastrophic days
	Bushfire	adequate large vehicle access to property
	Drought	replace showerhead with ultra-low-flow
-0.4	Storm	secure outside doors, gates, fences
	Storm	park car under cover/away from trees
	Heatwave	insulate house
	Heatwave	have cool room to sleep in
	Storm	identify strong safe interior room
	Bushfire	State all route(s) to safer places
-0.6	Storm	avoid going out in forecast storms/high winds
	Heatwave	service air conditioner/replace filters
	Storm	secure loose items in yard and outdoor areas
-0.8	Heatwave	have curtains with pale lining/blinds
SD -1.0	Heatwave	avoid going out hottest part of day
	Heatwave	have cool place to go (e.g. library, etc)
-1.4	Bushfire	monitor fire warnings for following day
-1.6	Heatwave	bring pets inside during day



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INSIGHTS FROM PLACE-BASED RESILIENCE BUILDING IN VICTORIA

Disaster Resilient: Future Ready is a national, multi-year, place-based initiative that supports and strengthens the capacity and capability of remote, rural and regional communities to thrive and be resilient to the impacts of climate change, disasters and other disruptions.

The approach brings together grassroots organisations and community representatives to collaborate to collectively design and lead approaches that increase preparedness and strengthen resilience capacity.

Resourcing and support over time from the Foundation for Rural & Regional Renewal, guidance by coaches, alongside an action learning process led by researchers from the University of Sydney, enabled all three communities to activate a diverse range of resilience building efforts including community connection events, locally developed information resources, relationship building with local emergency management agencies and personnel, and resilience-focussed community consultation that added value to formalised local government emergency planning efforts.

Learnings

- The Disaster Resilient: Future Ready approach is effective.
- The approach allows communities to develop unique solutions and a collectively agreed action plan.
- Communities have the potential to build resilience locally over time regardless of their past or anticipated disaster experiences.
- Projects are contextualised, allowing actions to be shaped to very different local circumstances and priorities and to respond to changing timelines and evolving community life.

Insights

- Relationships and networks are key.
- Resourcing and support over time is critical.
- A flexible, adaptive and patient approach is important for sustainable outcomes.

Impact

- Community members have a deeper understanding of how emergency management works and who is involved.
- The networks, connections and value of volunteers and locally-based NFPs are better recognised, understood and utilised by emergency management agencies.
- The existing efforts of local government in disaster planning and response are strengthened and better understood by local people and organisations.
- Knowledge and awareness of disasters and their local impact is increased within the wider community.

WHERE:

Korumburra, Myrtleford, Whittlesea

WHEN: 2022/25

(after NSW pilot 2017/20)

NEXT: Now running in the Burnett Inland
of Qld



"(The community) started to develop its own identity...there's so much more of a positive feel about town and about community. It's really good to see things moving ahead."

Community project
group member



Learn more



Scan the QR Code to read the FRRR Insights Report - Disaster Resilient: Future Ready Victoria Program.

For more information about FRRR's Disaster Recovery and Climate Resilience programs and initiatives, contact Nina O'Brien n.obrien@frrr.org.au or stop by Resilience Lane to say hello! www.frrr.org.au

Acknowledgement: Insights based by Joseph, P., Rawsthorne, M. & Howard, A. (2025). Action Research Report for Community Partners into FRRR's Disaster Resilient: Future Ready Victoria Program Foundation for Rural & Regional Renewal.

Disaster Resilient: Future Ready Victoria was made possible through the financial support of the Sidney Myer Fund, Lord Mayor's Charitable Foundation, Maple-Brown Family Foundation, Simon Kucher and Partners, Ronald Geoffrey Arnott Foundation, H & L Hecht Trust, Suncorp, Pinnacle Charitable Foundation and the Doc Ross Family Foundation.

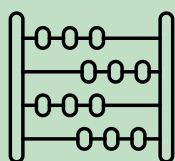
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THE POWER OF INVESTING IN PEOPLE AND PLACES

Fast Facts



\$6.69m
funds
received



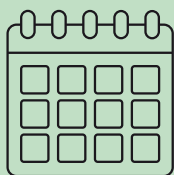
More than
50 rounds



Over 490
projects



7
program
elements



12.5 year
program
length

12.5 Years of Bushfire Recovery Through the Victorian Bushfire Appeal Fund

The FRRR Victorian Bushfire Appeal Fund (VBAF) Program stands as a remarkable example of sustained investment in community resilience. Active for some 12.5 years, VBAF's longevity and community-led approach empowered locals to shape their own recovery after the 2009 Black Saturday bushfires.

Its support spanned mental health, infrastructure, and wellness initiatives, offering a holistic model rarely seen internationally.

The Foundation for Rural and Regional Renewal delivered VBAF on behalf of the Department of Families, Fairness and Housing Victoria following the bushfires, through a variety of tailored programs designed to relieve hardship and distress for the individuals and communities affected by the bushfires.

After more than 50 rounds of funding, 490 projects, and support of more than \$6.69 million across seven program elements, ultimately VBAF highlights the power of investing in people and places—not just for recovery, but for building stronger, more connected communities.

It is a testament to what can be achieved when support is sustained, inclusive, and driven by those who know their community best.

Outcomes and Impact

Supported the wellbeing and resilience of pre-school, primary and secondary school aged children and young people through:

- Fostered emotional healing, social connection, and community identity by creating safe, inclusive environments through youth-focused initiatives.
- Skill development training, wellbeing activities, and youth service delivery.
- Infrastructure that supports connectedness and wellbeing.

Improved mental health and wellbeing of communities and individuals through:

- Grassroots initiatives that provided accessible, trusted pathways to healing.
- Art therapy programs.
- Skill development and training that equipped individuals with tools to manage stress and build resilience.
- Wellbeing activities - mindfulness sessions, group workshops, and recreational programs.

Strengthened community connectedness, sense of place, and community identity through:

- Rebuilding a strong sense of community and shared identity.
- Fostered connection, collaboration, and pride in place.
- Infrastructure that supported social connectedness.
- Skill development training that strengthened community networks.
- Events that brought people together to celebrate local culture.
- Community gardens and environmental recovery.

Community capacity building for future disasters through:

- Skill development and support that strengthened strategic and business planning.
- Governance and leadership development.
- Succession and continuity planning.
- Financial sustainability initiatives.

Support us



FRRR is reliant on the generosity of donors; both small and large, to enable this important disaster recovery and preparedness work. Find out more about the impact of the Victorian Bushfire Appeal Fund on the FRRR website - www.frrr.org.au

To make a donation, or explore a partnership opportunity with FRRR, please visit: www.frrr.org.au/giving or phone 03 5430 2399 and speak to the Partnerships Team.

To learn more about FRRR community-led resilience building initiatives and the diverse ways FRRR support communities contact: info@frrr.org.au, visit www.frrr.org.au or stop by Resilience Lane to say hello!

SUPERCHARGING LOCAL BACKBONE ORGANISATIONS

Locally based not-for-profit organisations play a critical role in disaster recovery, often performing an important role as a local 'backbone', or the conduit of financial support to the local community for a diverse and often complex range of priority projects and initiatives. Over time, and with increasing and overlaid disasters, they also require specific support to ensure their governance, finance and other internal systems keep apace so they are not exhausted and overwhelmed by each new disaster.

Traditionally, funders have supported external community facing projects and initiatives, with far less investment being directed into the long-term internal sustainability of the funded organisations. Through the support of trusting donors, Foundation for Rural & Regional Renewal (FRRR) recognised that these organisations can be better supported to improve, or sustain their operations, and ultimately strengthen the process of community-led recovery in the medium and long-term.

Over a three-year period, and through a trust-based philanthropic approach by FRRR, the Bushfire Recovery Fund has supported a collection of small grassroots organisations impacted through the 2019/20 bushfires to radically transform their internal operational capacity, when they were ready, and in turn, strengthen their and their communities' ability to respond to disasters and disruptions into the future.



Mount Beauty Neighbourhood Centre Inc

Location: Upper Kiewa Valley, Alpine Shire, Victoria
Grant: \$100,000
Enable the local volunteer resilience committee's implementation of sustainable community preparedness and resilience building programs in partnership with MBNC

Outcome

- Employing a project officer to coordinate community recovery activities and events post bushfires.
- Practical workshop activities to strengthen community disaster preparedness and connectedness, including a biannual community resilience picnic coordinated with local emergency services and the volunteer-run Keep Calm Committee.

Impact

- Increased organisational capacity to meet high level of community need in recovery process through increased staff resourcing.
- Increased social connection, and networks post disaster, supporting general wellbeing and mental health.
- Increased connection to available services and support by local community members.
- Increased skills, knowledge, and recognition of the importance of disaster preparedness.

"MBNC now sees its role in promoting community preparedness, resilience and recovery as being on-going and long-term." - Mount Beauty Neighbourhood Centre Inc



Mallacoota Community Health Infrastructure and Resilience Fund (CHIRF)

Location: East Gippsland Shire, Victoria
Grant: \$113,230
Develop and deliver long-term local health access solutions aligned to community recovery plans

Outcome

- Enabled the employment of a skilled local project manager to build business cases, complete grant applications and oversee implementation of successful grants.
- Secured Commonwealth government \$2 million infrastructure grant for a purpose-built Wellbeing Centre, to meet community need and provide services not currently available locally

Impact

- Enabled hyper local advocacy and planning efforts to establish critical community-based infrastructure in unique and geographically isolated location.
- Recognition and celebration of 'ground-up' community leadership.
- Increased ability to meet future community growth, and disaster related needs.

"The project itself has had extraordinary results. It funded a consultant who helped to submit a successful \$2 million infrastructure grant, so the outcome for the community will be a new Health and Wellbeing Centre, so huge thanks to FRRR!" - CHIRF



Alpine Valley Community Leadership

Location: North East Victoria
Grant: \$90,000
Enable and empower community organisations in Alpine Shire to take leadership in community-led recovery

Outcome

- Strengthened leadership capacity of organisations in the region.
- Improved understanding of response and recovery frameworks.

Impact

- Increased skills in strategic planning.
- Strengthened network of local organisations.
- Effective collaboration for future disaster response and recovery.

"We consulted with a range of local stakeholders, including the Council, Border Trust (administrator of recovery funds) and a Neighbourhood Centre, to ascertain the most valuable options within the community, and considered the factors specific to the region, including volunteer fatigue and burn out, and a high number of community events."

Learn
more



To learn more about FRRR community-led resilience building initiatives and the diverse ways FRRR support communities contact:
info@frrr.org.au, visit www.frrr.org.au, or stop by Resilience Lane to say hello!

Acknowledgement: The Bushfire Recovery Fund was made possible through the support of the Helen Macpherson Smith Trust and the Sidney Myer Fund.



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BLACK SUMMER, 5 YEARS ON

Five years on, what did we learn from Black Summer?

Through delivering \$26 million across 240 communities through more than 920 projects; FRRR have generated deep insights, and in many instances, witnessed radical transformation, about the difference that the funds have made.

Funds raised
\$26M, via 11,940 donations from more than 6,633 unique donors
Recovery appeal - \$18.6m
Disaster Resilience Recovery Fund - \$4.7m
Australian government grants - \$2.7m

1,455 grant applications seeking \$30.7m

Funds distributed
\$19.3m via 12 programs

Median grant awarded - \$18,686

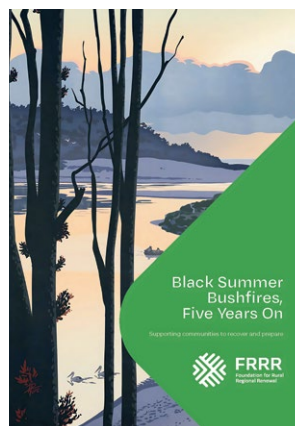
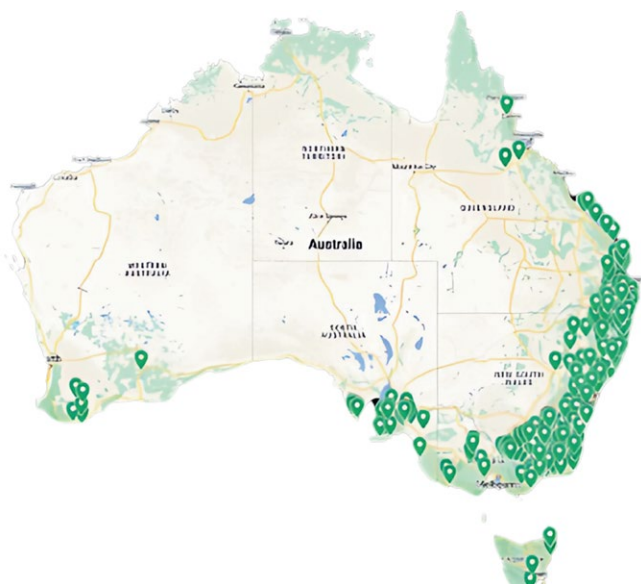
Funds awarded
929 projects and activities

Across 240 communities

Including 65 capacity building initiatives through NEMA funding

Key Learnings

- The importance of funding medium to long-term recovery to respond to community needs as they evolve, other disruptions occur and when the time is right for them.
- The catalytic role of small grants and how they can be leveraged by communities to secure more funding and additional or expanded projects.
- The importance of events and local facilities in recovery and resilience building.
- Patient and trust-based giving enables communities to build back better.
- A need to invest in the capacity of volunteer-led community groups and not-for-profit organisations, especially in small and remote places.
- A need to be inclusive, particularly of marginalised groups to ensure existing disadvantage isn't exacerbated.
- Learning to walk alongside First Nations Peoples with an embedded intention around strengthening self-determination.
- Investment in preparedness needs to happen alongside recovery efforts.
- Money is important, but it needs to come with empathy and support, so people feel heard and understood.
- How funders, especially philanthropy and government, play different but equally important roles in supporting recovery and need to collaborate.



Learn more



Read the Black Summer Bushfires, Five Years On report and watch the insights video on the FRRR website.

FRRR is grateful to the thousands of donors – individuals, small businesses, trusts, foundations, government and large businesses – who trusted us to get the funding to community groups in the affected areas, when the time was right for them. Thank you for your support, which made FRRR's granting and capacity building activities possible after the 2019/20 bushfires.

To learn more about FRRR community-led resilience building initiatives and the diverse ways FRRR support communities contact:

info@frrr.org.au, visit www.frrr.org.au or stop by Resilience Lane to say hello!

EMBRACING AI AND EMERGING TECHNOLOGIES FOR FIRE/HAZMAT SAFETY

SHIFTING FROM REACTIVE TO PROACTIVE RESPONSE

Fire/hazmat response is evolving with four key technologies transforming how emergency teams operate:

- ✓ **Generative AI:** creates new content by learning patterns from existing data—used to predict high-risk scenarios or develop interactive training materials.
- ✓ **Machine Learning:** analyzes vast datasets to simulate potential incidents, generate dynamic response plans, predict injuries, and support real-time decision-making.
- ✓ **Internet of Things (IoT):** generates a continuous stream of data through smart sensors, wearables, and area monitors in the field—for faster alerts and integrated communication across teams.
- ✓ **Cloud Connectivity:** delivers real-time visibility into personnel status, hazard exposure, and location—ensuring critical information is accessible anytime, anywhere.

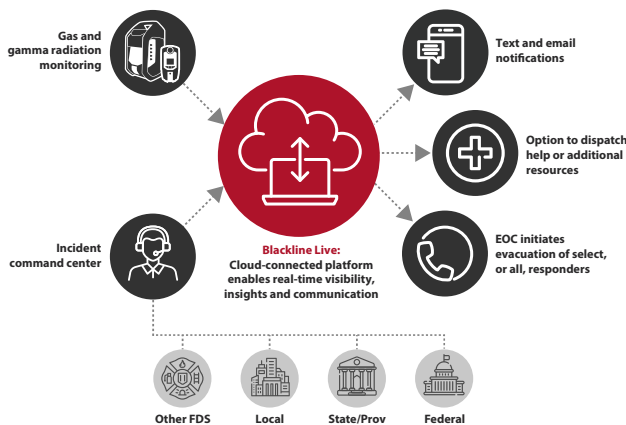


These technologies are all linked. That's because the quality of data **output** from generative AI and machine learning hinges on the quality of data **input**. That's where IoT and cloud connectivity come in—creating a true connected safety ecosystem that generates reliable and easy-to-access data. When analyzed by AI, it's this data backbone that supports the shift from reactive to proactive safety.

CRITICAL TECHNOLOGY CAPABILITIES

A connected safety solution that includes cloud-connected wearables, area monitors and monitoring platform can give responders the smart data they need for a clearer, real-time picture of unfolding events:

- ✓ **Live gas and radiation monitoring:** detects toxic or flammable gases and/or gamma rays in the field instantly and shares data with command centers.
- ✓ **Location visibility:** Pinpoints responder positions within hazardous zones for coordinated movement and support.
- ✓ **Environmental intelligence:** can analyze air quality, heat, and monitor plume patterns to predict changes before they become threats.



NO MORE BLIND SPOTS

Data from connected devices enables faster decisions and smarter resource deployment when seconds matter:

- ✓ **Predictive analytics:** analyzes data to identify likely escalation points and recommend actions to contain them early.
- ✓ **Digital collaboration:** connects field teams and incident command with real-time data sharing.
- ✓ **Post-incident insights:** automates reports to help understand usage, exposure levels, alerts and more with actual data—not subjective info—to inform future training and plans.



Being able to hear the radio transmissions and see the location of the responders on the map we were able to quickly direct and adjust the response remotely. And with the real-time data—we could follow how the incident was progressing. The safety devices proved their worth to us right then and there."

– Fire Department Lieutenant, Major U.S. City

Keeping responders and communities safe during fire/hazmat events requires more than just action—it **d demands prediction, prevention, and early detection/intervention**. AI revolutionizes all three, but can only work with a solid data infrastructure.

Blackline Safety can provide practical guidance on how to reap the benefits of AI—and the data foundation you need to get there.



Scan QR Code to learn more

blacklinesafety.com

BACK TO BASICS: EMERGENCY MANAGEMENT ENGAGEMENT ACROSS THE WHEATBELT AND GOLDFIELDS-ESPERANCE REGIONS

A monthly webinar series connects district experts with Local Government Authority (LGA) staff, community members, State agency personnel, and emergency management enthusiasts. These short lunch-and-learn sessions cover procedural knowledge, lessons learned, and advocacy efforts to ensure appropriate resourcing. Topics in 2025 include road closures, animal welfare, public information, and more.

Complementing this, a bi-monthly newsletter shares sector updates, grant opportunities, preparedness advice, webinars, and additional resources.

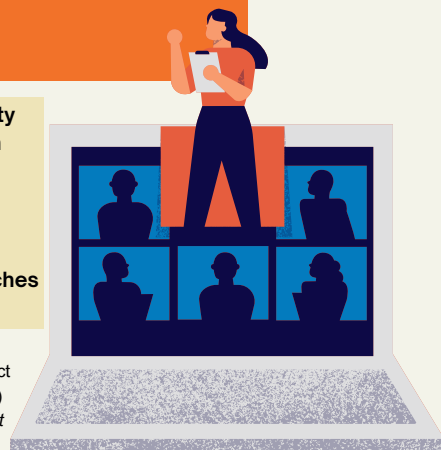
Together, these initiatives engage hundreds of stakeholders and highlight the need for innovative approaches to emergency management (EM), building capacity and capability across the regions.

Authors

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Gene Pears (WAPF) - DEMC Chair (Wheatbelt)
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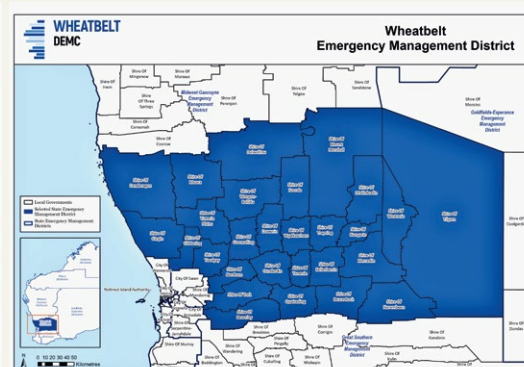
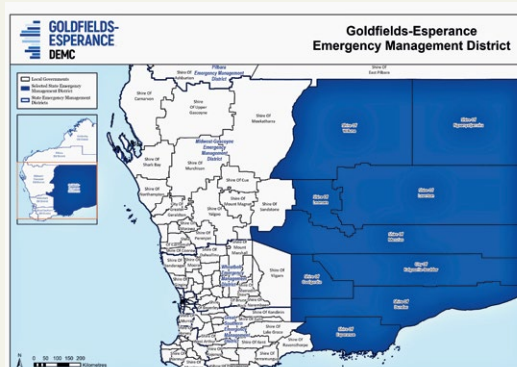
Authority

The Wheatbelt and Goldfields-Esperance District Emergency Management Committees (DEMCs) operate under the *WA Emergency Management Act 2005* and are supported by the WA State Emergency Management Committee.



WHERE?

The Wheatbelt and Goldfields-Esperance EM districts cover 38 LGAs across approximately 1.2 million km². These regions encompass WA's key road transport and supply routes, remote Aboriginal communities, pastoralist communities often disconnected and isolated from their LGAs, and expanding commercial farming sectors. Incidents such as truck fires, hazardous material spills, and road crash rescues demand significant time and resources, predominantly responded to by local volunteers. Floods, earthquakes, heatwaves, power disruptions, and animal-related incidents are not uncommon and continue to require coordinated multi-agency efforts throughout the year.



WHY?

The State Emergency Management Framework sets out requirements for local and district level EM activities. Over the last six months, the Wheatbelt and Goldfields-Esperance EM districts have completely retransformed how these activities are undertaken.

Moving away from routine meetings and large-scale exercises; a focus of bite-size, localised ways of knowledge sharing are the priority.

The focus is on shifting mindset from EM being reactive and only occurring during or after a hazard event, into something that is, in its essence, not only business continuity planning, but also community development, safety and wellbeing.

Regular webinars and newsletters are a means to communicate that we must broaden our EM knowledge and build capacity across prevention, preparedness and recovery, rather than just response, and that the ownership of that knowledge needs to be far greater than our emergency services personnel.



District Emergency Management News Wheatbelt May 2025

WELCOME!

Welcome to the second District Emergency Management newsletter for the Wheatbelt District

This newsletter is one of the key engagement tools being implemented to support Strategic Business Plan priorities across the Wheatbelt District Emergency Management Committee. This newsletter aims to ensure the 28 LGAs across the district, along with district level stakeholders, are receiving consistent and timely EM updates. Your feedback on how this process can be improved is always welcomed.

This newsletter features the following sections, please click through to view them:

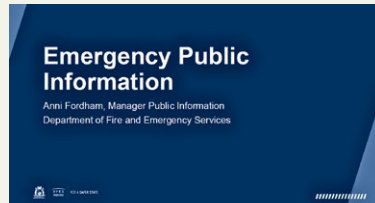
- Wheatbelt District News: DEMC, GECZ Forum, Committees of Council, & CDRS Workshops
- Webinars
- Funding, grants and awards
- Monthly Preparedness Topic
- State News
- Additional resources
- Want to share something? Get in contact

HOW?

These initiatives were designed based on feedback from the district EM sectors' desire to improve their EM knowledge, but not having easy access or the time to dedicate to learning across the PPRR spectrum. Based on this stakeholder feedback, the idea of a monthly, 30-45 minute recorded lunch-and-learn style webinar series, and a bi-monthly newsletter was created.

The webinar series engages District leaders to present on their topic of interest and expertise, to fill knowledge gaps and build EM capacity and capability across the Districts. Webinars are recorded and placed on an accessible Google Drive, along with presentation materials and is shared far and wide across not only the two districts, but also the State. The newsletter is targeted to each district and spotlights important work, successes or opportunities to engage, as well as being a promotional tool for funding and grants.

On average, we have anywhere from 40-70 participants join any one webinar, a self subscriber mailing list of over 300 across the webinar and newsletter, a newsletter engagement rate of over 60% and countless downloads of recorded webinar materials.



A Model for Sharing Firefighter Knowledge

Background

A tabletop model was created to help share knowledge at a local brigade. The success of this approach has been embraced by the DFES Bushfire Centre of Excellence and Queensland Fire Department with both agencies integrating models into bushfire training courses, drills and exercises.

With access to these models firefighters, particularly volunteers, have creatively used them for:

- Incident debriefs
- Tactical Exercises Without Troops
- Community engagement
- Hazard reduction burn planning
- School programs.



Training Resource

Models enable trainees to actively engage with the training material, ask questions and strengthen their knowledge. Simultaneously, trainers gain real-time feedback from observing students demonstrate their understanding.

Tabletop models successfully integrate visual, auditory and kinaesthetic learning styles to meet a broad range of Language, Literacy and Numeracy abilities.

A collaborative learning environment is created as knowledge is shared and skills including teamwork and communication are practiced.

Tabletop exercises

Desktop simulation models have emerged as a game-changer in emergency and bushfire management training.

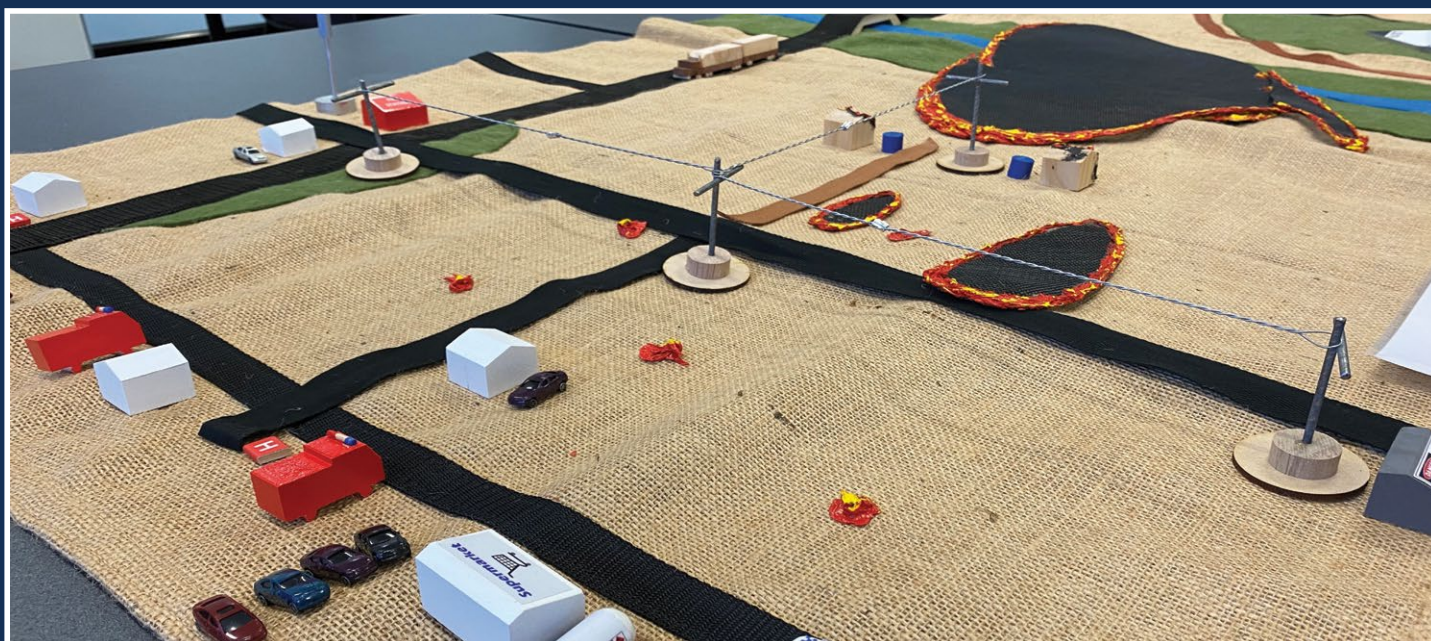
These models provide a virtual representation of real-world scenarios, allowing trainees to engage in decision-making processes, resource allocation, and strategy development without the risks associated with actual emergencies.

The use of such models can significantly enhance the cognitive skills of emergency personnel, preparing them for the complexities of bushfire management.

Valuing experience

Models draw on the wealth of knowledge held by firefighters and provides a means for this experience to be shared.

The success of this approach has expanded with similar models created for State Emergency Services and Fire and Rescue Services personnel.



Author: Paul Blechynden - Bushfire Model®

Contributors: Russell Wells - DFES Bushfire Centre of Excellence
Mark Doble - Queensland Fire Department



THINK TREES, THINK ACTIVE

Innovative Tree Management for Disaster Response & Recovery:
Leveraging Technology, Expertise & Collaboration with Industry

By integrating arboricultural & vegetation management expertise, we have built resilient systems, disaster-ready equipment resources and future-ready workforces that have supported and augmented existing services to speed community recovery.

2021



2022



2023



2024



2025

VIC Storms | SA Fires | VIC Microburst | NSW Floods | QLD Storms | QLD Cyclone



Storm and Bushfire Recovery

- Magni telehandlers
- Rapid tree removals



Rapid Damage Assessment (RDA)

- Triaging
- Scalable recovery workflow management



Bushfire Mitigation & Recovery

- Forest mulchers, dozers, excavators, grinders
- High productivity



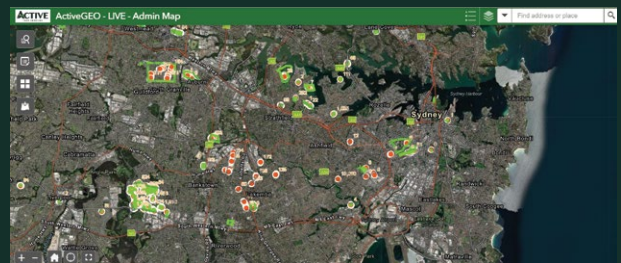
Vegetation Management & Tree Hazards

- IoT Tree Tilt detection alarm
- Starlink for reliable data communication



Flood Response & Recovery

- Cab-based pruning, large volume chippers
- Reduction of human risk interface



Storms & Disasters

- Configurable, rapid deployment GIS systems
- Support IMT's with real time data & reporting



Contact:
Goetz Graf
goetzg@active.com.au
www.active.com.au





Leaders in Renewable Energy Fire Safety....

*Providing world-leading industry
guidance on renewable energy fire
risk management.*



Specialist Risk and Fire Safety Unit

risk-info@cfa.vic.gov.au

*CFA has engaged with **over 220 renewable energy projects** since 2017, providing advice on site access, water supplies, fire breaks, fire protection, vegetation management and emergency planning.*

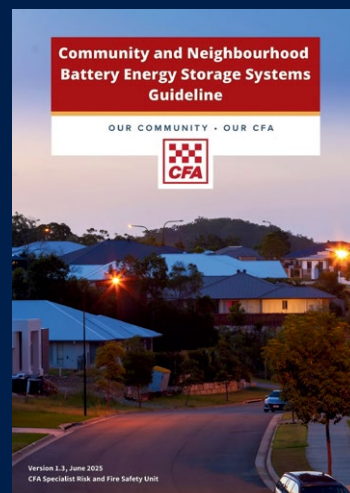
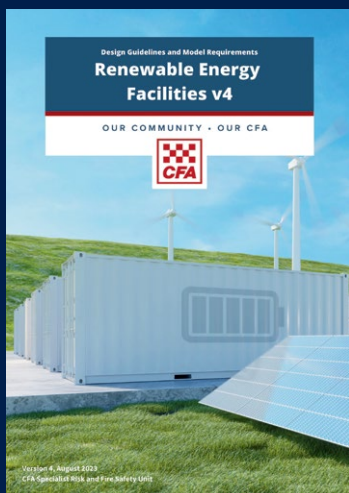
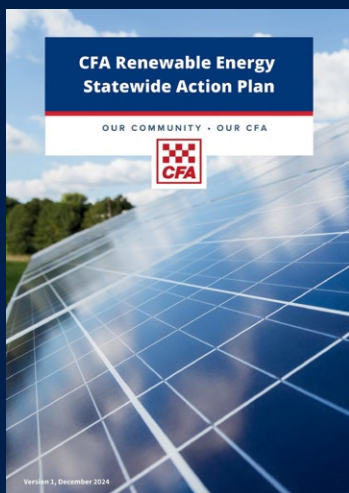


*CFA's internal strategy for
managing risks associated
with renewable energy
projects.*

*CFA's guidance for industry
on fire risk in planning,
design and operation of
renewable energy facilities,
including batteries.*

*CFA's guidance for
developing fire safety
studies for complex battery
projects.*

*CFA's guidance for
community battery projects
covers consulting with CFA,
safe siting and emergency
planning.*



HARNESSING VOLUNTEER EXPERTISE TO MODERNISE EMERGENCY SERVICES

THE SERAC MODEL



Reimagining Leadership Through Participative Governance

The Southeast Regional Advisory Council (SERAC) is a volunteer consultation model within CFA's southeast region of Victoria, that embeds participatory, human-centered advice and guidance into the heart of CFA leadership. SERAC provides a strategic leadership consultation process for the region's senior emergency management leadership team, ensuring local input of experienced operational volunteers who directly influence the future of CFA service delivery.

A Modern Advisory Council - Embracing the Knowledge and Experience of Senior Volunteers

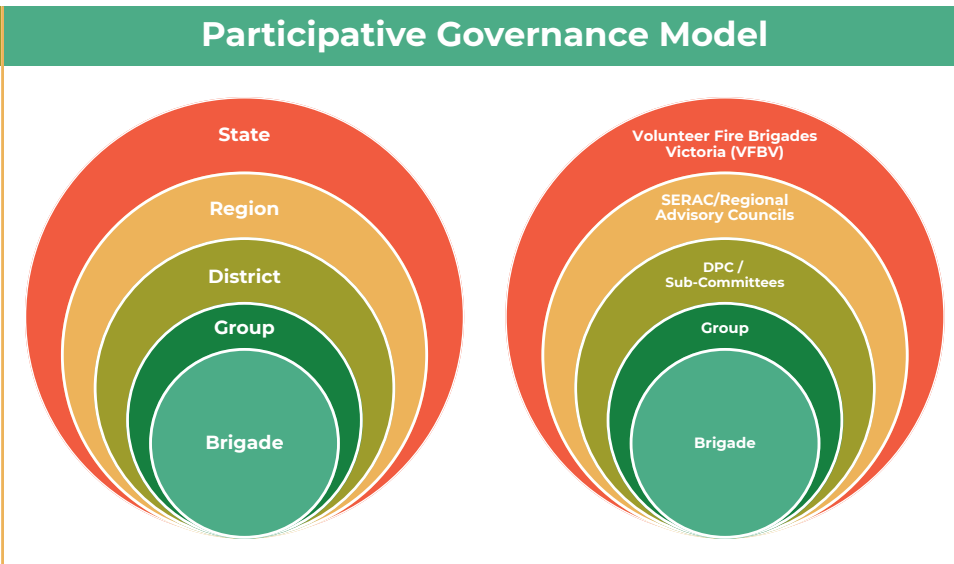
SERAC represents CFA's most advanced application of participative governance – a model where good advice and guidance are informed by those who protect lives and property on the front line. Every member is a high-performing leader, representing a cross-section of regional CFA experience – from current and former captains to strategic thinkers and operational experts.

This model reflects the future of emergency service: consultation with senior management that is connected and trusted. This model seeks to improve the relationship between volunteer and paid management to deliver better outcomes in a united, transparent, and trusted operating environment.

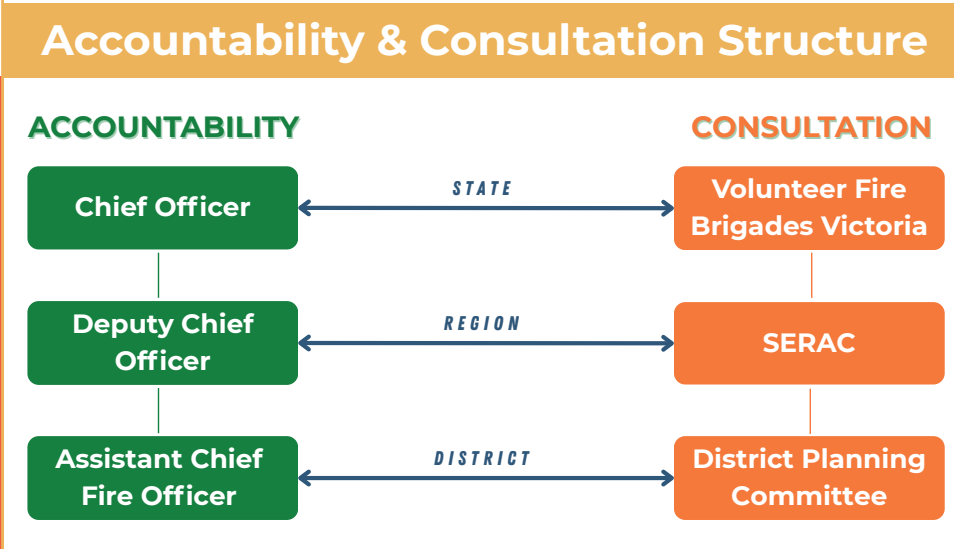
What Makes SERAC Different?

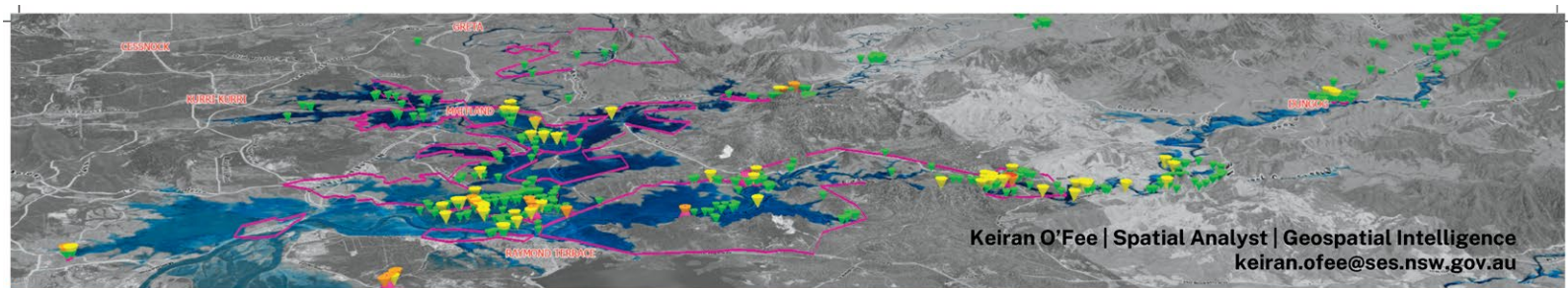
- Modernised Leadership Structures – SERAC enables a true participatory model – not just consultation, but co-creation. It aligns directly with CFA's legislative consultative obligations, values, and the Volunteer Charter.
- **Human-Centered Innovation** – Using design thinking and inclusive workshops, SERAC applies iterative feedback loops and provides a platform to tackle complex issues from the ground up.
 - **Frontline-Led Strategy** – Experienced volunteer leaders contribute decades of real-world knowledge and emotional intelligence, ensuring decisions are contextually grounded and operationally sound.
 - **Resilience by Design** – By anticipating challenges such as climate change, volunteer recruitment and retention, and shifting community needs, SERAC future-proofs CFA's strategic direction.
 - **Real Operational Impact** – From improving resource allocation to increasing morale and enhancing trust in leadership, SERAC demonstrates measurable outcomes for CFA brigades, groups, and regions.

- Why it Matters for the Sector
- Builds credibility for leadership by showcasing alignment with volunteer expectations and frontline realities.
 - Encourages transformation without losing connection to community and identity.
 - Empowers volunteers as core contributors, not passive participants.
 - Demonstrates best practice in participative governance and organisational modernisation.
 - Provides a platform for best practice consultation and engagement with senior leaders.



“SERAC isn’t just a forum - it’s a frontier. A leadership innovation that bridges CFA’s proud past with agile, accountable emergency services of tomorrow.”





FROM IDEAS TO ACTION

How research and artificial intelligence accelerates collaboration and innovation in the management of flood emergencies

In an age where data and intelligence seem to be in excess, the ability to sift through, process and present information in an easily digested format is becoming a growing priority. For the NSW State Emergency Service (NSW SES), accurate flood extents are used throughout the spectrum of planning, preparedness, response and recovery.

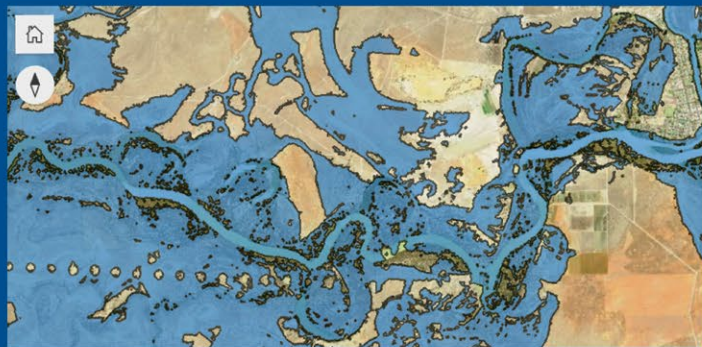
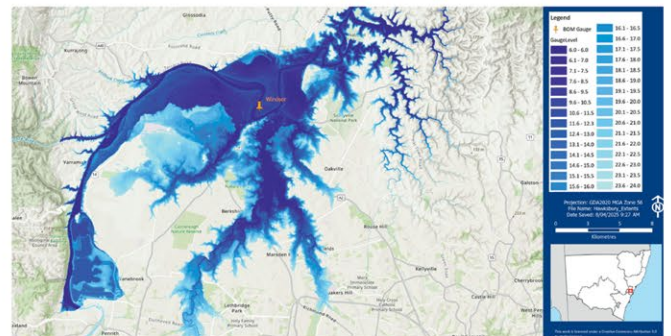
Increasing the accuracy and accessibility to these datasets have flow on effects beyond emergency management, through to our local communities.

- 1  Smart tools leading to more accurate and timely information for decision making
- 2  Collaboration between Emergency Services, Technology Experts and Local Government
- 3  Leveraging existing data and intelligence sources already used in emergency management
- 4  Resulting in more informed communities during emergency preparedness and response

Reinterpolated Flood Extents

NSW SES has re-interpolated flood modelling outputs with technical assistance from WMAwater, for 30 high risk catchments with reference to the local key forecast warning gauge.

This will provide a broader understanding of flood extents and resulting consequences at these trigger levels and enable enhanced analysis and visualisation of the floods in a community.

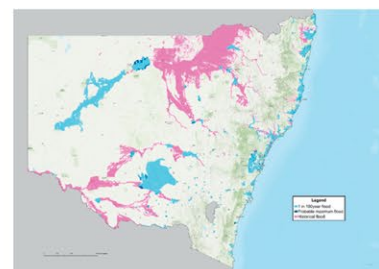


Operational Flood Extraction tool

NSW SES has partnered with NSW Spatial Services – Emergency Information Coordination Unit and Deloitte to build a minimum viable product flood extraction tool. The tool ingests multi-spectral imagery (with near infrared) provided by NSW Spatial Services, and utilises artificial intelligence with machine learning to build near to real-time flood extents, available in a web feature service. This tool will allow the team to provide flood extent information quickly, within hours of capture, streamlining the process currently utilised by the agency.

NSW Flood Data Portal

The NSW Flood Data Portal hosts modelling data and outputs from flood studies conducted by local government throughout NSW. Modelling is completed to annual exceedance probabilities (AEP) which don't typically align with flood warning gauge trigger levels. Flood models are provided to NSW SES via the portal as part of the NSW Floodplain Management Grants Program, with a number of these models being further utilised to create our reinterpolated extents, more closely aligning model outputs with key trigger levels.



Flood Data Access Board



Subset of the NSW Strategic Flood Database showing:

- 1% AEP
- PMF
- Historical Flood

www.ses.nsw.gov.au

"Geospatial intelligence puts clarity in the hands of the Incident Controller – delivering the right information, at the right time, for faster, safer decisions."
Joshua Clarke - Western Zone Deputy Commander



ses.nsw.gov.au 132 500

@nswses

facebook.com/NSW.SES

Australia's Riskscape in 2024–25

A companion to the Major Incidents Report 2024–25

Disasters are a serious disruption that can affect people's health and wellbeing, their livelihoods, their educational outcomes, their cultural practices, and their community's cohesion. This is because people are exposed to hazardous events that interact with risk factors such as exposure, vulnerability, and capacity. These risk factors and their extent vary, which effect recovery timeframes that can span decades on.

Riskscape is a visualisation of social practices and behaviours, places or time.¹ They represent complex, multiple, and overlapping risk settings, which may be as diverse as:

- natural hazards,
- political insecurity,
- crime,
- contagious diseases,
- technological threats, or
- economic crises.

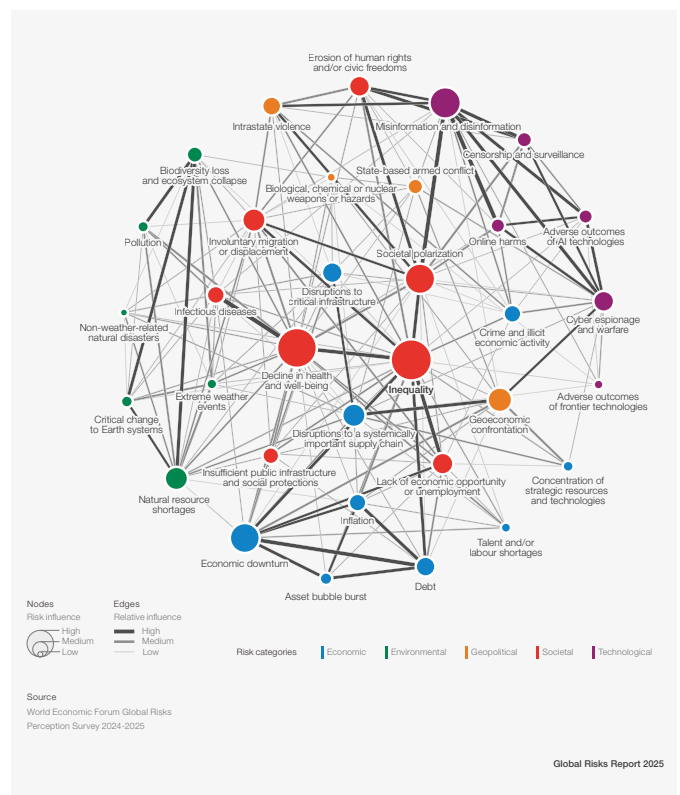
Understanding riskscape helps us understand how people live in places and deal with multiple risk factors. Riskscape also act a tool to understand the systemic nature of risk.

This report is a companion piece to the Major Incidents Report 2024–25. To make sense of the reasons and impacts of the years incidents, the riskscape draws on the World Economic Forum's (WEF) societal, economic, environmental, geopolitical, technological risk categories, and their global risk projections for 2024. It is also informed by the United Nations University's 2025 Interconnected Risks Report and the Lloyds Register Foundation World Risk Poll. And uses the UNDRR GAR Special Report to deeply analyse the riskscape within the Australian context.

The systemic risk conditions in which the major incidents of this year occurred that are further explored in the report include:

- Evolving risks
- Impact timeframes
- Housing and infrastructure
- Finance (insurance, economic preparedness and response capacity)
- Health, social dynamics and vulnerable groups
- Ecosystems, climate and nature-based solutions
- Cyber and digital risk, tech as a double-edge sword
- Recovery time frames and capabilities
- Climate themes

1. Muller-Mahn, D (Ed.) (2012) The Spatial Dimension of Risk: How Geography Shapes the Emergence of Riskscape (1st ed.). Routledge. doi.org/10.4324/9780203109595



The World Economic Forum's Global Risk Interconnections Map 2025

Source: World Economic Forum Global Risk Landscape: The Global Risks Report 2025. <https://www.weforum.org/publications/global-risks-report-2025/>

Scan to read the report (and the forthcoming Riskscape 24-25)



For more information contact:

john.richardson@aidr.org.au and simone.dekker@aidr.org.au

KNOWLEDGE.AIDR.ORG.AU/RESOURCES/MAJOR-INCIDENTS-REPORT



Australian Government
National Emergency Management Agency

Australian Institute for
Disaster Resilience



Australian Disaster Resilience Knowledge Hub

A national open-source platform that supports and informs policy, planning, decision making and contemporary good practice in disaster resilience.

The Knowledge Hub:

- fosters collaboration among leading agencies and organisations
- highlights current and emerging themes in resilience
- links national guidelines with research
- provides information on historical Australian disasters
- is available on desktop, mobile and tablet.



Disaster Mapper



CONTRIBUTE A RESOURCE

Know of a great resilience resource? The Australian Institute for Disaster Resilience welcomes content submissions for the Knowledge Hub – read the guidelines and submit online at knowledge.aidr.org.au/contribute

Scan to explore
the Knowledge Hub

www.knowledge.aidr.org.au



KNOWLEDGE.AIDR.ORG.AU

Australian Disaster Resilience Handbook Collection

The Australian Disaster Resilience Handbook Collection supports the implementation of the *National Disaster Risk Reduction Framework*, the *Australian Disaster Preparedness Framework*, and the *Australian Disaster Recovery Framework* by providing national principles and guidance to strengthen the resilience of Australian communities to disaster. Short on time? Each handbook has a series of short quick guides to get you up to speed on key principles and practices fast.

The Handbook Collection:

- provides an authoritative, trusted and freely available source of knowledge about disaster risk reduction and resilience principles in Australia
- aligns national disaster resilience strategy and policy with practice, by guiding and supporting jurisdictions, agencies and other organisations and individuals in their implementation and adoption
- highlights and promotes the adoption of good practice in building disaster resilience in Australia
- builds interoperability between jurisdictions, agencies, the private sector, local businesses and community groups by promoting use of a common language and coordinated, nationally agreed principles.

View the
collection online



knowledge.aidr.org.au/handbooks

**Australian
Emergency
Management
Arrangements**

**Community
Engagement for
Disaster Resilience**

**Community
Recovery**

**Communities
Responding to
Disasters: Planning
for Spontaneous
Volunteers**

**Disaster
Resilience
Education for
Young People**

**Emergency
Planning**

**Evacuation
Planning**

**Flood Emergency
Planning for
Disaster Resilience**

**Health and
Disaster
Management**

**Incident
Management**

**Land Use
Planning for
Disaster Resilient
Communities**

**Lessons
Management**

Managing Exercises

**Managing the
Floodplain**

**Planning for
Animals in
Disaster**

**Public
Information
and Warnings**

**Safe and Healthy
Crowded Places**

**Systemic
Disaster Risk**

**Tsunami
Emergency
Planning in
Australia**

**Australian
Disaster
Resilience
Glossary**

[KNOWLEDGE.AIDR.ORG.AU/HANDBOOKS](http://knowledge.aidr.org.au/handbooks)



'Sharing Connection'

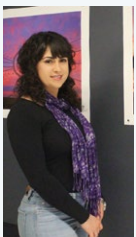
Maddi Moser (Taungurung artist), 2024

This artwork represents connection through all living things. It depicts the sharing of knowledge and process of learning – circles are continuous and have no beginning or end, reflecting the process of the sharing of stories, wisdom and learning. The patterns highlight wisdom and the flow of teaching, learning and sharing knowledge and skills. It reminds us that we are connected through the past and into the present.

Background

AIDR commissioned this artwork to honour and pay respect to Aboriginal and Torres Strait Islander peoples and their enduring connection to Country. The artwork represents the alignment of AIDR's organisational vision with the deep ancestral wisdom that Aboriginal and Torres Strait Islander peoples have with land and waters, and the vital role this knowledge plays in the collaborative nature of disaster resilience and risk reduction. AIDR's intention is for this artwork to serve as a visual Acknowledgement of Country across all our work.

About the artist



Maddi Moser is an Aboriginal artist, designer and secondary school teacher. Maddi is a proud First Nations person and is a member of Taungurung Mob in Victoria, whose ancestral Country encompasses Seymour and Broadford along the Goulburn River. Taungurung is part of the Kulin Nations (Melbourne).

Maddi currently works as a teacher and runs her own design and photography business. She now resides in Townsville but has lived the majority of her life on the NSW/VIC border, having close ties to the Murray River from this experience and waterways due to her mob. This is a theme often reflected on in her artwork.

Maddie uses her background in design to create art in a modern and unique style that helps to continue and celebrate her cultural heritage. These skills help her to create detailed traditional and digital artworks using mixed media.

Through consultation with AIDR staff, Maddi developed this artwork to represent AIDR's development and curation of knowledge about disaster risk reduction, resilience and the importance of connection with Country and each other.



Australian Government
National Emergency Management Agency

Australian Institute for
Disaster Resilience



CREATING A... SOCIAL CAPITAL + SOCIAL INFRASTRUCTURE MEASUREMENT FRAMEWORK TO BENEFIT EVERY AUSTRALIAN



National discussion tour

We need a national framework that includes the voices and realities of all Australian states and territories.

In May-June 2025, Renae Hanvin and Professor Daniel Aldrich visited every state and territory to engage with the people, programs, and policies driving resilience at the local level.

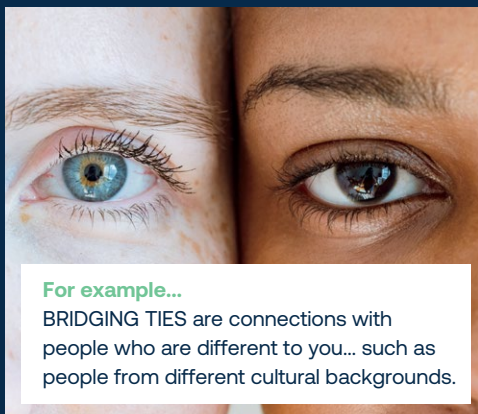
40 events | 300+ participants | 6 weeks



Creating unified descriptors

We need a common language across Australia to describe social capital and social infrastructure.

That's why we're creating descriptors (not definitions) so every Australian can talk about the benefits of 'people connections' and 'places that foster people to connect' in any and every conversation.



For example...

BRIDGING TIES are connections with people who are different to you... such as people from different cultural backgrounds.

Benefits of Social Capital and Social Infrastructure Measurement

Multiple benefits were identified throughout the national discussions, including:

- Bringing the human factor into disaster resilience measurement, recognising that people have the capacity to build and sustain resilience within their communities
- Opportunity to capture the baseline and measure impact over the long-term
- Providing evidence to guide policy, planning and investment
- Combining social capital and social infrastructure data with vulnerability indicators to better understand how to support vulnerable communities
- Transferrable data across many sectors such as education, health and social services, and climate adaptation



Community places

Social businesses

Open spaces

Places of worship

Australian-ising categories

We need social infrastructure categories to reflect all Australian communities.

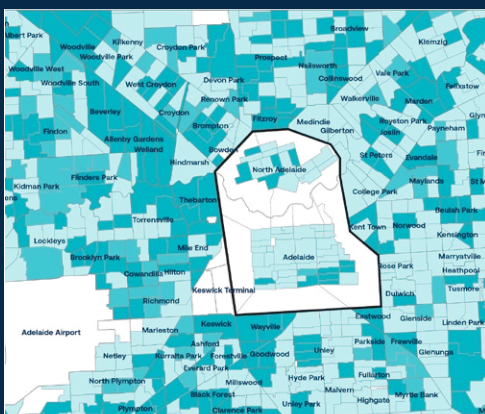
We're "Australian-ising" Professor Aldrich's social infrastructure categories to reflect our unique context; measure the real places and spaces that connect our communities before, during and after disasters.



SA1 "neighbourhood" data

We need data to measure social capital at the local or neighbourhood level.

Unlike any other dataset in Australia, we're measuring bonding, bridging and linking ties at the SA1 (neighbourhood or block) level - providing evidence of localised strengths and vulnerabilities to guide future focus and investment.



Scan QR code to read more about this project or visit us at:

ResilientReady.org



This 'Creating a Social Capital + Social Infrastructure Measurement Framework to benefit every Australian' project received funding from the Australian Government.



ABSTRACT FOR AFAC 2025 CONFERENCE: FROM LOCAL TO GLOBAL: LEVERAGING SYSTEMS, CAPABILITY, AND CONNECTION

INNOVATING LIFESAVING: BRIDGING LOCAL EXPERTISE WITH GLOBAL TECHNOLOGY FOR SAFER BEACHES

BACKGROUND

As global connections in emergency services expand, the need for innovation and collaboration to ensure a safer, sustainable future is critical. The 2024 Surf Life Saving Australia (SLSA) Innovation Day emphasised the importance of blending local expertise with advanced technology to enhance safety, efficiency, and sustainability in lifesaving operations. The event showcased technologies that improve response capabilities and equip lifesaving teams for future operations across Australia.

DESCRIPTION

The event highlighted several innovations, including the Adivo Life Saving Rashie, GPS trackers, Drone in a Box, Emergency Response Beacons, AI Camera technology, "The Chase" Search and Rescue device, and unmanned water response vehicles like Seabob, FReD, RoboDucky, and U-Safe systems. These technologies aim to improve response times, operational effectiveness, and support lifesavers in complex environments. Feedback revealed that while these technologies hold promise, thoughtful collaboration and refinement are required to scale them effectively across the country.

LESSONS LEARNED

Key insights from the 2024 Innovation Day pointed to areas needing improvement. For example, the FReD device, useful for water rescues, requires better battery life and performance under challenging surf conditions. The Adivo Rashie needs improvements in weight and portability for surf sports. RoboDucky's capabilities for mass rescues are promising, but durability and control must be enhanced. Additionally, the event highlighted the potential of electric vehicles like E-bikes and outboard motors in providing sustainable, high-performance technology for rescue operations.

CONCLUSIONS

The 2024 Innovation Day demonstrated the importance of collaboration in advancing lifesaving technologies. The lessons learned emphasise the need for continuous testing, refinement, and cross-border partnerships to ensure these technologies meet the evolving demands of emergency response. By fostering such collaborations, we can create a more connected, capable, and resilient lifesaving system, working toward reducing coastal drownings.



Blockchain-Enabled Collaborative Flood Insurance: A Conceptual Framework



Yasodha Kalutotage, Temitope Egbelakin, Buddhini Ginigaddara
School of Architecture and Built Environment, University of Newcastle

yasodha.kalutotage@uon.edu.au

BACKGROUND

1. Insurance Unaffordability: A National Crisis
12% of Australian households (171,000 homes) experiences home insurance affordability stress, with floods contributing to more than 50% of their premiums, amounting to AUD 8,800 (Chow et al., 2023).

3. Consequences of Operational Inefficiencies

- Delays in flood recovery (McKenzie et al., 2022)
- Increased costs for insurers, policyholders, and government agencies (McKenzie et al., 2022)

4. Requirements for Enhancing Flood Insurance Operations

- Investment in operational processes (Deloitte, 2023)
- Infrastructure development (Deloitte, 2023)
- Technology enhancements (Deloitte, 2023)

INDUSTRY NEED

- Need of flood insurance affordability** (NSW Reconstruction Authority, 2024)
- Improve operational efficiency of the flood insurance system through technology integration** (Deloitte, 2023)

2. Factors Influencing Flood Insurance Unaffordability

Internal factors Operational inefficiencies of the flood insurance process

Complex and less transparent policies	Product Development
Inconsistent policies and guidelines across insurers	
Unclear definition of terms	
Inaccurate risk assessment and premium calculation	Underwriting
Inadequate pricing structures	
Variation in underwriting standards and pricing	
Delays in the issuance of flood insurance policies	Claims management process
Inadequate resource allocation	
Excessive document request	
Resource scarcity	Complaints management process
Inadequate scenario planning	
Prolonged disputes over liability	
Short-sighted approach of managing complaints	Technology and system integration
Claim denials due to policy exclusions or conditions	
Disputes over claim amounts	
Inadequate complaint recognition	Data Management
Challenges in providing adequate support	
Outdated systems	
Separate systems for different functions	Governance and Compliance
Lack of system integration	
Inadequate data systems and records	
Limited access to third-party data	Collaboration
Confusion in policy interpretations	
Inadequate communication	
Poor inter-organisational collaboration	
Poor intra-organisational collaboration	

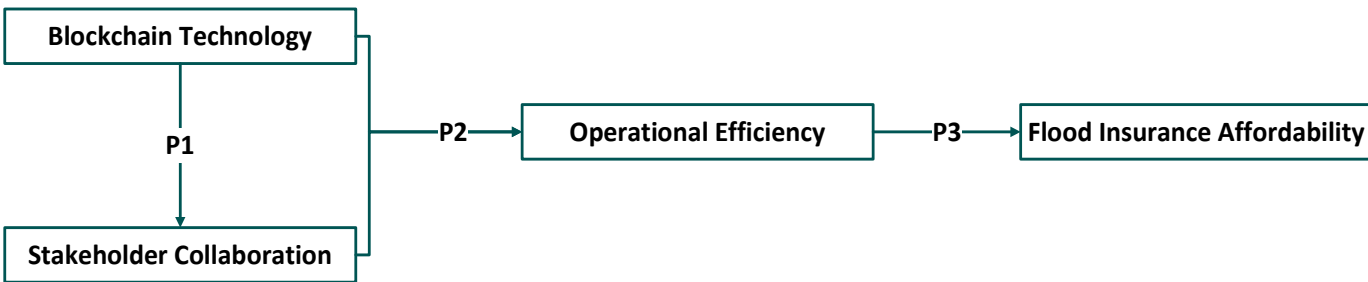
External factors Factors beyond the control of the flood insurance process

Government involvement	Political
Tax policy	
Governance issues	
Interest rates	Economic
Inflation	
Supply chain strain	
Rising housing prices	Social
Tight labour market condition	
Uneven distribution across regions	
Household income	Technological
Cultural and behavioural attitudes towards risk management	
Social interactions	
Information sharing	Legal
Technological advancements	
Data availability and accessibility	
Risk-based pricing laws	Environmental
Land use planning regulations	
Building regulations	
Climate change and global warming	
Rising sea level	

AIM

To investigate how blockchain technology addresses the operational inefficiencies in the current flood insurance system to improve affordability.

CONCEPTUAL FRAMEWORK



P1: The adoption of blockchain technology facilitates transparent and effective collaboration among stakeholders in the flood insurance system.

P2: The combined effect of blockchain adoption and stakeholder collaboration improves the operational efficiency of the flood insurance system

P3: Operational efficiency in the flood insurance system, driven by blockchain technology, positively impacts the affordability of flood insurance.

NEXT

- Conduct expert interviews to validate the research propositions.
- Develop a framework for integrating blockchain technology applications into flood insurance process, focusing on improving affordability.

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- McKenzie, J. W., Longman, J. M., Baillie, R., Braddon, M., Morgan, G. G., Jegasothy, E. & Bennett-Levy, J. 2022. Insurance Issues as Secondary Stressors Following Flooding in Rural Australia—A Mixed Methods Study. *International Journal of Environmental Research and Public Health*, 19.
- NSW Reconstruction Authority 2024. State Disaster Mitigation Plan 2024-2026.



Creating Future-Ready Emergency Management and Community sectors using Transformative Scenarios for a Climate-Challenged World



Natural
Hazards
Research
Australia

Liza Gelt¹ Rosie Tran¹ Gill Fletcher¹ Dr Michael Rumsewicz¹ Nicola Moore² Katelyn Samson³ Matt Dyer⁴

1. Collaborative Consulting Co,

2. Natural Hazards Research Australia

3. AFAC and Australian Institute for Disaster Resilience

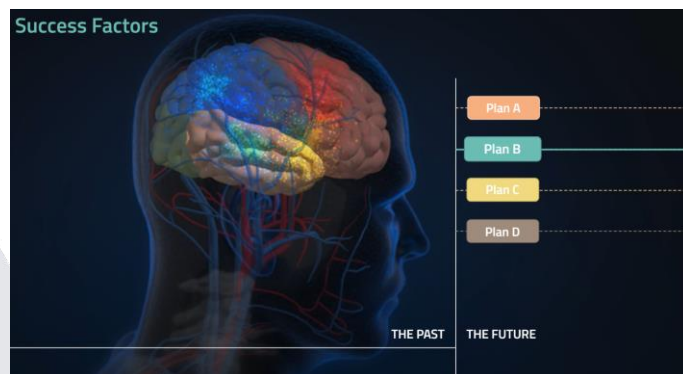
4. Queensland Fire Department

Utilisation of Transformative Scenarios in a Climate-Challenged World

Transformative Scenarios support an organisation's planning process and help prepare for an uncertain future, building resilience to natural hazards and climate change. This process won't accurately predict future events, but it will provide an ability to elicit action in response to a new perception of the future.

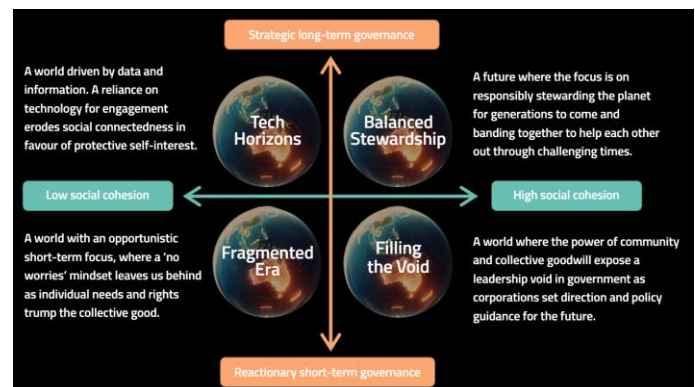
Transformative Scenarios

Based on research with senior emergency management experts and leaders in Australia and New Zealand, the Transformative Scenarios resources are fit for purpose and provide the tools to stress-test your strategic priorities, plans and policies with your Boards and senior executive leadership teams. They are designed to support emergency management and related community sector organisations navigate challenges and create opportunities in an ever-changing landscape.



The Benefits

The Transformative Scenarios process allows organisations to 'wind tunnel' or stress-test current plans. It **prompts organisations to think beyond the usual assumptions, expand their perspective by considering their adaptive and transformative capacities, and the weak signals and lead indicators that may indicate that the future is unfolding in a particular direction.** By using this approach, organisations can identify opportunities to take proactive, transformative actions that shape a better future that might otherwise remain unnoticed. It's practical, forward-thinking and could make all the difference.



Online modules and supporting resources

Designed to be practical, insightful and accessible: the resources' design considers the busy schedules of organisational leaders and streamlines access to the underpinning science and research that supports the Transformative Scenarios process. Intended to be used in a live workshop environment, the Transformative Scenarios guide leaders through the Transformative Scenarios process.



Further information

For additional information scan the QR code or contact:
Liza Gelt, Principal Researcher, Collaborative Consulting Co
liza.gelt@collaborativeconsultingco.com.au

Early Career Fellowship: Guiding Law Reform for Australia's fiery future

Dr Phillipa C McCormack^{1,2,3}

¹ Future Making Fellow, Environment Institute & Adelaide Law School, The University of Adelaide ² Australian Research Council Discovery Early Career Research Award (DECRA) Fellow, The University of Adelaide ³ Adjunct Lecturer, University of Tasmania Law School

I am grateful to live and work on the land of the Muwinina people of Lutruwita, and the Kurna people of the Adelaide hills and plains. I acknowledge Country and the Elders that have listened to, loved and cared for her, including with law and fire, since forever.

Building a global network to inform *great* fire laws, here in Australia

NHRA is supporting me to maximise the value of my research on fire law and policy reform, including to NHRA's end-users and stakeholders. We will showcase great examples – from Australia and overseas – of laws, in operation, that are helping agencies, communities and environments to adapt to future fire regimes.

The Fellowship priorities

This early career fellowship has two key priorities.

Priority 1: Showcasing great examples

What would the law look like if it was helping us to adapt?

There is currently no research institute or repository providing detailed information about cutting-edge fire law and policy research. There is also no public collection reporting on the multitude of practical legal and policy reforms that are already being implemented around the world to improve the flexibility and adaptiveness of fire-related laws, to enhance our capacity to live with fire.

The first priority for this fellowship is to design and launch a new, easily accessible and engaging website. The website will present research insights from my Australian Research Council project about adaptation-oriented bushfire prevention, preparation, response and recovery laws. This new website will also showcase examples of 'bright spots', that is, practical examples of laws and policies that are facilitating fire adaptation in Australia and elsewhere in the world.

Priority 2: Sharing insights globally

Learning from others around the world that are thinking about this

The second priority for this fellowship is to establish a new Global Wildfire Law & Policy Network. The Network will bring together leading fire law and policy scholars. We will work together to build the new, online collection (Priority 1), and to highlight innovative legal tools, principles and approaches to adapting to future fire regimes. The Network will enhance our capacity to learn from each other and facilitate more rapid adaption to future fires.



Background

Since the 2019–20 bushfires, reports such as the Royal Commission into National Natural Disaster Arrangements (2020) and state equivalents have recommended that Australian governments review their laws and policies to address barriers to reducing fire hazards.

These recommendations echo past inquiries that urged governments to reduce regulatory complexity and improve hazard reduction. Australian governments have also signed a National Partnership Agreement on Disaster Risk Reduction (NPDRR) to share costs to 'proactively reduce the risk and limit the impact of disasters ...on Australian communities and economies' (NPDRR 2020, cl 11), a priority requiring legal reform. Despite broad consensus about the need to improve laws to adapt to future fires, scientific scholarship about mitigating fire risks is not yet being effectively implemented in law. This demonstrates a serious, science-to-law translation challenge.

My research aims to help overcome that translation challenge.



Further information

For additional information scan the QR code or contact:

Dr Phil McCormack, Future Making Fellow, The University of Adelaide
phillipa.mccormack@adelaide.edu.au

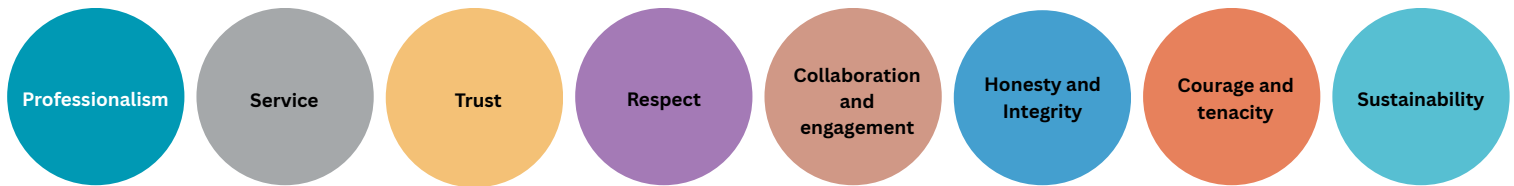
"If you build it, they will come": An SES UNIT 30 years in the making

The establishment of the first SA State Emergency Service (SES) unit to be built from scratch in over three decades marks a significant milestone in emergency management and community safety in South Australia.



A comprehensive approach was taken to ensure the unit's successful creation, focusing on risk identification, capability allocation, political influence, and innovative strategies for recruiting and engaging over 40 volunteers in the absence of a physical building. Underlying each achievement was the strong demonstration of SASES values, guiding decision-making, collaboration, and commitment.

SASES Values



Risk Profile

Undertake a risk assessment of the proposed response boundaries to determine risks identified and impact to community, the determination of capabilities and resource allocation



Support

Significant political and community support was generated through local advocates and the local member resulting in an invested community.

News Release

Light Electra Office
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P (08) 8522 2878
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E info@lightelectra.com.au



Tony Piccolo MP
State Member for Light
Labor Duty Member for Schubert

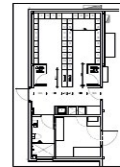
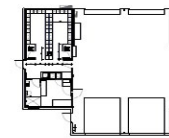
Monday, 29 April 2024

GAWLER SEE COMING TO THE RESCUE IN 2025

The proposed construction of a new \$4.995 million Gawler South Australian State Emergency Service (SASES) Unit is nearing its final hurdle after being presented to

Design

Identified learnings from previous builds and a nationwide environmental scan saw improved design layout, changeroom functionality and modern technologies embedded. Consideration for diversity and equity were included and consultation with both staff and volunteer stakeholders was undertaken.



Recruitment

A comprehensive recruitment and onboarding strategy was developed that maximised community engagement opportunities, volunteer interviews, traditional/social media and information sessions. The true value of the campaign and community support became clear when the first information session recorded more than 70 people registering to attend, requiring a second night to be scheduled.



Retention

Since October 2024, the Gawler SASES Unit has recruited and retained 40 members. These members continue to stay engaged to the highest level, despite the physical build not being completed until Aug 2025. Members trained fortnightly as a unit, attended district training courses, have deployed to neighbouring units to assist with requests for assistance and have even deployed interstate. Ensuring they have felt valued, celebrated, have a sense of purpose and engaged in the design and build process, has seen the GAWLER SES unit retain 98% of their starting membership.





Bushfire Centre of Excellence
TRAINING / KNOWLEDGE / ENGAGEMENT

Introducing the Bushfire Centre of Excellence Partnership Model

and how we partner for research



Who are we?

The Bushfire Centre of Excellence is DFES's hub for bushfire knowledge, training and engagement in WA.

Why partner with us?

Broaden our capabilities through alternative resourcing and delivery methods.

Partnering to address our Research Gaps

- Collaborating with research partners to access in-kind support or funding in priority areas
- Open to discussions with researchers interested in our focus areas
- Seeking partnerships with organisations that support bushfire-related research

The Bushfire Centre of Excellence is looking to partner on projects and programs like:



Bushfire engagement opportunities



Research programs addressing our priorities



Better information resources



Embracing safe and respectful sharing of cultural knowledge



Supporting cultural fire programs



Supporting training development and delivery

Partnerships

With...

Traditional Owners
Community groups
Government
Industry and private
Not-for-profit
Universities
Research institutions
Training providers

For...

In-kind contributions
Affiliation, access, or business support
Research
Exchange of products or services
Receipt / provision of funding
Capability building

How...

Resource Sharing Agreements
Letter of Support Agreements
Contract for Services Agreements
Memorandums of Understanding
Sponsorship Agreements
Grant or Funding Agreements
Acceptance of Donations Agreements
Letters of Agreement

Recovery

Respond to need by providing trauma-informed, practical assistance where appropriate, raising awareness of available financial counselling services and providing early recovery support.

Provide post-disaster financial counselling support and advocacy to the community for as long as needed, whilst identifying and addressing key systemic issues and gaps in service relevant to financial counselling.

Record key learnings and share information with the community and with the peak association and the sector community of practice to increase disaster resilience.

Learning

Work with the community and with disaster preparedness initiatives to raise awareness of the financial aspects of disasters to better prepare the community to address these.

Clients

Community

Voluntary Home Buy-Back Program

Part of the Resilient Homes Fund | Jointly delivered by the Australian and Queensland Governments

Milestones



Registrations open for
Resilient Homes Fund.

12 May 2022

12 August 2022

First homeowners advised
of eligibility for buy-back.

Property valuations
commenced.

17 August 2022

6 September 2022

First letters of offer
sent to homeowners.

First offers accepted
for buy-back.

12 September 2022



28 October 2022

First home settlement
under program.

First home demolition for
program in Goodna, Ipswich.

24 January 2023

10 March 2023

100 homes settled
under program.

300 additional homes
identified for buy-back.

18 June 2023



30 July 2023

Registrations of interest close
for Resilient Homes Fund.

Settlement of first
Community Title Scheme
was achieved.

12 & 13 October 2023

5 November 2024

Final home settled, totalling
685 homes bought back under
the VHBB program.

Demolition and rezoning underway,
with the VHBB program to be fully
completed by June 2026.

Today





Our purpose

The Home Fire Sprinkler Coalition (HFSC) Australia will inform and advocate the benefits of home fire sprinklers to protect Australian communities from the impact of residential fires, and to support the sustainability of the built environment.

Who we are

HFSC Australia is a partnership of AFAC, the national council for fire and emergency services, and Fire Protection Association (FPA) Australia representing the fire protection industry. The coalition is supported by industry members and partners.

Stakeholders

Stakeholders include those working to support public safety and improved resilience in the built environment, from a variety of sectors including:

- Education and research institutions
- Architects/designers
- Fire authorities
- Fire protection equipment industry – manufacturers, suppliers, designers, installers and servicing companies
- Home builders/developers/owners
- Insurers
- Peak community organisations
- Plumbing (retail and installation)
- Water authorities
- Building regulators
- Building certifiers/surveyors
- Housing and planning departments – federal, state and local governments

Influencing change

ADVOCACY

Advocate the cost-effective benefits of home fire sprinklers to influence changes to consumer sentiment, building codes, legislation and industry adoption.

EDUCATION

Educate the community, industry, governments and fire services about the life saving benefits of installing home fire sprinklers.

RESEARCH

Establish a research agenda for home fire sprinklers to better understand consumer behaviour and expectations, building risk and environmental benefits.

CAPABILITY AND CAPACITY BUILDING

Develop and provide training, competencies and incentive schemes to support industry adoption of home fire sprinklers.

TECHNICAL ADVICE

Develop and provide tools, guidance and evidence to support the community, industry, governments and fire services to better understand and adopt home fire sprinklers.

STANDARD SETTING

Support and develop minimum standards for home fire sprinkler systems to ensure product conformity and build consumer and industry confidence.

Priorities

ADVOCACY – to improve public safety through residential sprinklers

- Support the extension of home fire sprinklers to one, two and three-level Class 2 and 3 buildings through a further proposal for change to the National Construction Code 2025.
- Continue advocacy and support for the installation of home fire sprinklers in social housing.

EDUCATION – to improve consumer, industry, fire authorities and government awareness

- Case studies developed for consumer and industry and promotion.
- Increase the 'signed up' supporter base to ensure broad stakeholder engagement.
- Support the installation of home fire sprinkler training props in fire service training facilities.

RESEARCH – to help tell our compelling story

- Undertake cost benefits analyses to provide the evidence to support the expansion of home fire sprinklers.

- Support research to build the evidence base for home fire sprinklers, including the efficacy of home fire sprinklers in bushfire defence.

CAPABILITY AND CAPACITY BUILDING – to ensure industry and practitioners can deliver

- Finalise online training modules for plumbers/sprinkler installers.

TECHNICAL ADVICE – to improve understanding and increase adoption of residential sprinklers

- Promotion of home fire sprinklers to industry, fire services and the community.
- Development of relevant tools, advice and guidance to support market expansion.

STANDARD SETTING – to ensure quality, reliability and safety

- Support the updating of technical specification guides.
- Develop home sprinkler technical specifications for Class 1a/b homes – metropolitan and rural/regional applications.



Living Lab Northern Rivers

LIVING
LAB
NORTHERN
RIVERS

Cultivating a new model for community-centred resilience

When devastating floods hit the Northern Rivers in 2022, they exposed a need for better disaster response models. The rising waters weren't just a reminder of our vulnerability to climate change; they made it clear that communities need new ways to adapt to unprecedented challenges.

Recovery would mean more than just physical reconstruction: it would require a wholesale rethink of how we build resilience in our communities.

Living Lab Northern Rivers was born from this moment, combining deep post-disaster recovery experience with innovative, community-centred resilience strategies. By operating in the crucial space between government, industry, academia, and community, we're proving that a different model is possible – one that brings world-class expertise and local knowledge together to drive real change.

Core elements of our model

1. The third space

Living Lab Northern Rivers operates as a 'third space', borrowing from the sociological concept of a space that sits outside traditional institutions. Working beyond both government and academia allows us to test new approaches that wouldn't be possible within traditional structures. We take the risks that government can't – trialling ideas, ground-truthing options and ideas, creating community agency, and clearing the path for lasting change.

2. Built to adapt

Living Lab Northern Rivers isn't structured like a traditional organisation – and that's intentional. We're designed for flexibility, responding quickly as challenges evolve. A small core team anchors our work, but our strength comes from an expansive network of collaborators – academics, community experts, leading practitioners and industry leaders. We scale up or down as needed, bringing in the right people for the right problems.

3. Community-centred methods

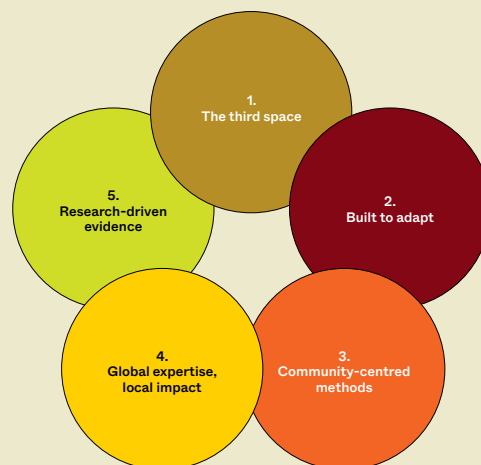
We've moved beyond traditional 'engagement' to develop new ways of working with communities. This isn't just about consultation – it's about creating the conditions for genuine co-creation, where local knowledge and technical expertise come together to shape solutions. Our methods ensure that communities aren't just consulted about decisions but are actively involved in shaping solutions that have the potential to influence decision-makers.

4. Global expertise, local impact

Our partnerships with Southern Cross University and the University of Technology Sydney provide world-class research capabilities and leverage global research networks, while our independence keeps us agile and community-focused. Few organisations in the adaptation and resilience space can move this quickly while staying this deeply embedded in local communities.

5. Research-driven evidence

Through the establishment of the Adaptation Research Network, we have built a community of researchers who are leaders in their respective fields. This growing group can be mobilised to work with us to investigate specific challenging questions that must be answered as we build a new evidence base to drive policy and program design.



Our work in action

Circular Timber
Salvaging value from disaster

Living Memory
Preserving community stories

Look Ahead
Community design for Lismore

FOUNDING PARTNERS



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LEARN
MORE

lnr.com.au





EMBRACING DIVERSITY AND INCLUSION AT NSW SES

NSW SES is building a more inclusive and resilient future by ensuring our members reflect the diversity of the communities we serve.

How we are making it happen

Diversity and Inclusion Steering Committee (DISC): Led by Deputy Commissioner with senior staff and volunteer advisors. Dedicated FT Diversity & Inclusion Coordinator position.

6 Diversity & Inclusion Reference Groups

- Aboriginal and Torres Strait Islander Peoples
- Disability and Carers
- Gender Equality
- Life Cycle
- Multicultural
- Pride



Strategic Framework: 4 Focal Areas



1 | **Governance** – Leadership and accountability



2 | **Awareness** – Communication and advocacy



3 | **Capacity Building** – Learning and development



4 | **Culture** – Member and community engagement

Key Achievements



- Reference Group Co-Leads (Staff and Volunteer)
- Executive Sponsors for each Reference Group
- Trial and rollout of Unit *Diversity and Inclusion Officer* roles
- Greater engagement and visibility through comms and events
- Recognition awards (e.g. NAIDOC, International Women's Day)
- Improved data tracking & inclusive tech updates (e.g. pronouns, non-binary options)



Outcomes



- Increase in inclusion-focused comms and celebrations
- Creation of fundamental governance documents including a RACI, Terms of Reference, Workplan and Action Plan
- Stronger policy input from *Reference Groups*
- Diversity data reporting tools
- Inclusive signature templates and language resources in development

What's Next



- Launch of *Diversity and Inclusion Policy* and *Reasonable Adjustments Procedure*
- Finalisation of our *Reflect Reconciliation Action Plan*
- Dedicated budgets for each *Reference Group*
- Recruitment campaign for new *Reference Group* members
- Creation of practical resources (Inclusive Language Guide, Cultural Guidelines)
- Continued collaboration with RFS and Fire & Rescue NSW



Want to learn more or access resources?

Nicholas Steepe | Diversity and Inclusion Coordinator
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facebook.com/NSW.SES

Changing the Way Our Community Thinks: Fostering Community Awareness for Disaster Resilience

State of Preparedness 2024

Presented by
Get Ready Queensland | Queensland Reconstruction Authority

About the Study

In 2024, Get Ready Queensland conducted quantitative research involving 1,535 interviews across five Queensland regions. This biennial study provides valuable insights into how Queenslanders prepare for severe weather, assessing impacts, preparedness behaviours, barriers, and motivators.



Key Findings



76%

of Queenslanders experienced disruptions from severe weather in the past two years.



52%

increase in Queenslanders who report preparedness as a regular habit, up significantly since the last survey.



16%

said their preparedness was triggered by witnessing impacts on others.

Top barriers to preparedness include:

Overconfidence

"If a disaster was about to impact my area I would have time to prepare then."

67%
agree

Risk perception

"In reality, the risk of major damage from a disaster is pretty low in my area."

55%
agree

Pressures of life

"To be honest, preparing or planning for potential disasters is not a top priority for me."

43%
agree

The study clearly identifies why some Queenslanders prepare and why others do not, providing critical data to guide targeted behaviour change efforts.

Understanding Our Audience

This research provides insights into how Queenslanders are impacted by severe weather. Over the last 2 years:

- **65%** experienced road damage, closures or delays
- **41%** experienced disruptions to local services such as schools, hospitals and supermarkets.

The research also highlighted that the pressures impacting getting prepared have increased since 2022.



2.6x as many people agreed they were too busy/overwhelmed to prepare.



7x as many people indicated they could not afford to prepare a plan/kit.

These insights enable Get Ready Queensland to:

- Measure preparedness accurately and identify gaps
- Examine regional differences, enhancing targeted messaging
- Customise communication to resonate effectively with diverse communities.

Turning Insights into Action

The State of Preparedness research strategically shapes all aspects of Get Ready Queensland's initiatives. It:

- Drives evidence-based behaviour change campaigns
- Helps Local Government Authorities (LGAs) understand regional preparedness trends, enabling tailored strategies
- Guides the creation and enhancement of digital tools like the Household Emergency Plan Builder, used by over 45,000 Queenslanders across all LGAs and town authorities.

Community Resilience Insights

71%

Most Queenslanders feel they could rely on their neighbours or friends to help if affected

48%

Around half have talked with others about disaster risks in their area

34%

A third would need to rely heavily on the SES/other emergency services

24%

A quarter regularly take part in local community events or groups



By understanding community barriers and motivators, Get Ready Queensland engages audiences strategically, embedding disaster preparedness and resilience as community norms.

Join the Conversation

How can we collectively:

- Sustain preparedness as a lasting habit?
- Engage and support high-risk or disengaged groups?
- Leverage post-disaster periods as opportunities for building long-term resilience?

Your insights can help shape a more resilient Queensland.



Learn more

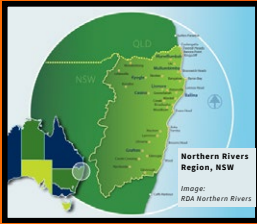
Scan the QR code to view the State of Preparedness Synthesis Report



Queensland
Government

Enablers of collaboration between disaster management and community

Emma Pittaway, Jo Longman, Petr Matous, Amanda Howard & Scott Webster
emma.pittaway@sydney.edu.au



ABOUT THE RESEARCH

12 qualitative interviews with disaster management personnel about their connections to informal community groups. Conducted two years after the catastrophic 2022 floods and landslides in the Northern Rivers, NSW.



Catastrophic floods and landslides in February and March 2022 damaged 15 000 properties across the Northern Rivers, NSW.

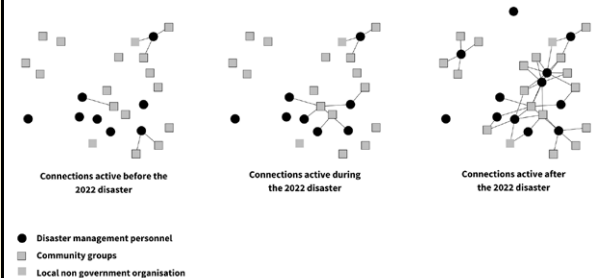
IMPORTANCE OF TRUST AND RECOGNITION

KEY FINDINGS

- Collaboration between disaster management agencies and community groups grew after the disaster
- New systems improved communication - but only if based on respect for community capacity and collaborative problem-solving with community
- Cultural barriers within disaster management agencies remain a significant challenge
- Building individual relationships of trust is critical but unsupported by agency structures



Evolution of the network between disaster management agencies and informal community groups



Development of a Northern Rivers region community-led disaster resilience alliance

UNIQUE STRENGTHS OF COMMUNITY-LED ORGANISING

2022 Study: 29 qualitative interviews with grassroots community organisers involved in response to and recovery from the catastrophic flood and landslides in the Northern Rivers, NSW. Conducted one year after the disaster.



KEY FINDINGS

Strengths of community-led disaster organising



DEVELOPING A COMMUNITY-LED ALLIANCE

2024 Study: Ethnographic study of the development of a regional alliance of grassroots community-led disaster resilience groups over twelve months from January to December 2025.



The Vision: Connected, collaborative Northern Rivers communities that are empowered to care for themselves and each other before, during and after disasters.

"You're building the plane while you're flying it and the plane's got some holes in it, so [the alliance] is like, 'have you got a bit of sheet metal I can borrow please?'"

(Community organiser participating in inaugural Alliance Summit, March 2024)

Housing, Homelessness, and Disasters—Time for coordinated reform

Dr Timothy Heffernan, ANU and UNSW

Kate Colvin, Homelessness Australia

Bridget Tehan, Australian Red Cross

Andrew Coghlan, Australian Red Cross



Disasters increase at-risk homelessness

When homes are unaffordable, insecure, or inadequate, people are more exposed to harm — and their capacity to recover is diminished. Every extreme weather event now has the potential to push thousands more into homelessness, while those already experiencing housing stress are less able to prepare or rebuild.

Example from the Northern Rivers, NSW



The Northern Rivers was experiencing a housing crisis before the 2022 floods.



Private affordable rentals reduced across the region by 45% between 2017-22.¹



The Northern Rivers has 4% of NSW's population, but 30% of its rough sleepers and just 6% of homelessness funding.²



18 months after the flood, 1,021 people remained in pods and 257 in caravans.³ 4 pod villages were demobilised in 2025.

A systemic approach is needed to reduce at-risk homelessness before, during and after disaster.

Delivering a national framework

In 2024, a national symposium brought together 125 professionals working across the housing, homelessness and disaster sectors.

A key finding was the need for a **national framework** to align policies and programs.

The framework calls for:

- A cross-sector taskforce made up of the government, emergency management, housing, and homelessness sectors.
- Person-centred, trauma-informed disaster planning—especially for renters and people at risk of homelessness.
- Resources for collaboration to embed emergency and long-term housing solutions into disaster preparedness.

This will strengthen existing efforts:

- Ensuring housing policies address climate disasters under the National Housing and Homelessness Plan, and
- Aligning housing with national disaster and climate risk planning and building standards.

Urgent action is needed now

Climate change won't wait for the housing crisis to be fixed. Disasters will continue driving housing insecurity. Now is the time to act—outside of disaster. A national framework can help to build greater equity.



Link to the report

AUSTRALIAN RED CROSS

FIRST NATIONS RECOVERY GROUP



Strength in Social Partnership for Disaster Resilience

Finding Identity Artwork created by Aneika Kapeen

THE SOCIAL PARTNERSHIP MODEL

FIRST NATIONS
LEADERSHIP IS CRUCIAL
FOR FOSTERING TRUST
AND RESILIENCE IN
DISASTER RECOVERY

BUILDING
STRONG
PARTNERSHIPS

EMPOWERING
LOCAL
COMMUNITIES

TRUST - RESILIENCE - LEADERSHIP -
COLLABORATION



Miyay Birray Brief



Submission Document





THE RIGHT TO MENTAL HEALTH FOR INTERNALLY DISPLACED PERSONS DUE TO SUDDEN ONSET CLIMATE DISASTERS

AUTHOR

Monique van Cauwenberghe
 PhD Candidate

AFFILIATIONS

University of Groningen, Groningen
 Centre for Health Law

INTRODUCTION

International human rights law (IHRL) provides important guidance in disaster contexts, however, alone it is unable to adequately address the unique challenges that arise. This first PhD chapter seeks to answer the following questions:

- What is the international legal framework for the right to mental health for internally displaced persons (IDPs)?
- How can regime interaction strengthen the right to mental health for IDPs?
- What does the right to mental health for IDPs entail within the context of sudden-onset climate disasters?

This first chapter of the PhD addresses these questions through an **international** legal lens, before examining the **Australian** legal disaster framework within later chapters.

OBJECTIVE

The objective of this research project is to improve how states *respect, protect and fulfil* the right to mental health for IDPs due to sudden-onset climate disasters.

It is unclear what the right to mental health for IDPs entails within the context of sudden-onset climate disasters. This is particularly due to the lack of doctrinal analysis and exploration of regime interaction, namely between IHRL and International Disaster Law (IDL).

The objective of this PhD chapter is to map and bridge relevant international legal regimes for the protection of the right to mental health for IDPs. In a similar vein, it also contributes to theoretical discussions of the structure of IDL as a new and growing field of international law.

METHODOLOGY

Due to a lack of doctrinal analysis on this topic, this chapter will conduct a doctrinal legal analysis of the international legal frameworks that outline the obligations to the right to mental health for IDPs.

It also pays attention to regime interaction of IHRL and IDL. Key sources include:

- Sendai Framework on Disaster Risk Reduction (2015-2030)
- International Covenant on Economic Social and Cultural Rights (ICESCR) - Article 12 on the right to the highest attainable standard of physical and mental health
- Convention on the Protection of Persons with Disabilities (CRPD)

SUDDEN-ONSET CLIMATE DISASTERS



Bushfires



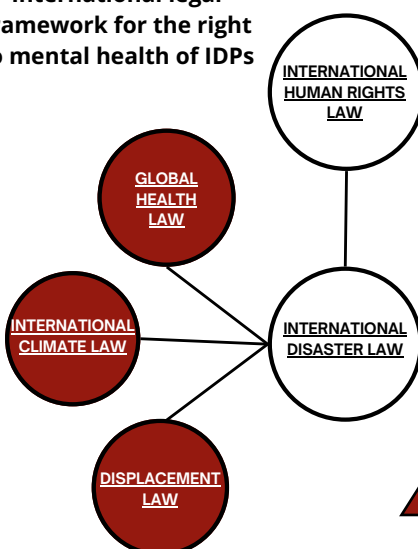
Flooding



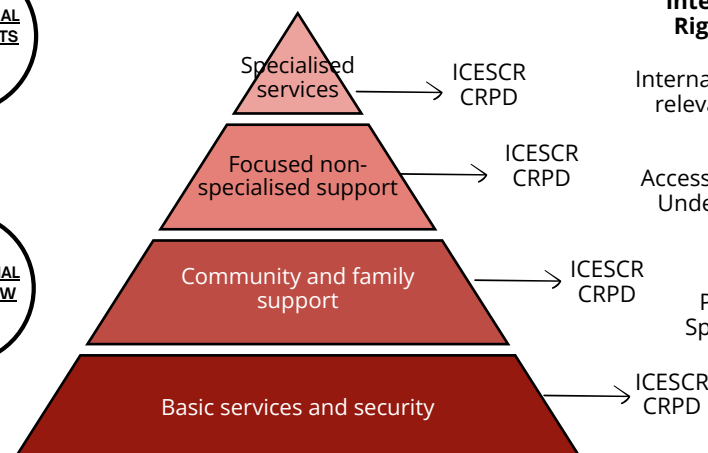
Cyclones

PRELIMINARY RESULTS

International legal
framework for the right
to mental health of IDPs



International Disaster Law
Mental Health and
Psychosocial Support for IDPs



International Human Rights Law
Right to Mental Health for IDPs

International human rights key elements
relevant to the right to mental health

ICESCR Article 12
Access to healthcare (AAAQ framework)
Underlying determinants of (mental)
health

CRPD
Prohibition of discrimination
Specific measures as legitimate
differential treatment

CONCLUSION

Building empowerment for rights-holders to claim their rights, and accountability of duty-bearers to respect, protect and fulfil their obligations.

References

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EviMaPS: Uncovering the current status and radical next steps for disaster-related mental health and psychosocial support (MHPSS)

Gibbs L¹, Leppold C¹, Molyneaux R¹, Abrahams J², Reifels L¹, Howard A³, Newnham E⁴, Marinkovic Chavez K¹, Otani J⁵.

1.University of Melbourne | 2.Monash University | 3.Phoenix Australia | 4.Curtin University | 5.University of Osaka



INTRODUCTION

Mental health and psychosocial support (MHPSS) policies and programs are becoming increasingly important for preventing and reducing the escalation of **disaster-related mental health problems**. The EviMaPS project aimed to identify the state of international knowledge, guidance and practice through a collaboration between a multi-national investigator team from Australia, Japan, Italy and USA, along with the WHO Centre for Health Development (WHO Kobe Centre).

METHODS

Phase 1: A key informant survey to identify disaster-related MHPSS policies and programs implemented between 2007 and 2024.

Phase 2: A scoping literature review to identify evaluations of disaster-related MHPSS initiatives published from 2007 to 2024.

Identified programs were mapped against the MHPSS Minimum Services Package (MSP) Checklist, the Inter-Agency Standing Committee (IASC) Intervention Pyramid, and the WHO Health Emergency and Disaster Risk Management Framework.

RESULTS

Phase 1 - practice mapping



9 MHPSS **policies**
92 MHPSS **programs**

being implemented in over **17 countries** and regions.

Phase 2 - scoping review



4 **reviews**
33 **primary research** articles

relating to the mental health outcomes of disaster related MHPSS programmes.

There were many examples identified of multi-level approaches to disaster-related MHPSS programs, as recommended by the IASC guidelines.

A series of brief case studies generated from both Phase 1 and Phase 2 demonstrated ways in which MHPSS approaches can be transformed across different sociocultural contexts.

The evaluation evidence typically related to reducing symptoms of mental health conditions, learning about coping, social support, and managing stress and difficult experiences after disasters.

MHPSS programs were often not based on evaluated programs but instead relied on overarching guidelines and frameworks to guide development and implementation, most commonly the IASC Guidelines for MHPSS in Emergencies. The majority of MHPSS programs and policies were focused on implementation after the hazard event.

CONCLUSION

EviMaPS provided insights into the existing and evolving field of disaster-related MHPSS. The recommendations for **governments, researchers and practitioners** highlight the important role of WHO and IASC guidelines which provide both evidence informed and expert consensus-based direction to policy and practice. They also indicate the need for a radical transformation in the field to implementing and evaluating **proactive MHPSS**, integrated into broader health and multisectoral activities and **suitable for compounding disaster scenarios**.

Monitor QR code for 2025 release of academic publication and briefs for policy, practice and research.



Contact: Professor Lisa Gibbs, University of Melbourne, lgibbs@unimelb.edu.au

Acknowledgements: The authors gratefully acknowledge funding support from the WHO Centre for Health Development (WHO Kobe Centre - WKC: K23003); the contributions of the co-investigators not listed here as co-authors including Anna Sozzi, Paola Caviliere, Alex Iacconi, Nahoko Harada, Patricia Watson, and Jane Nurse, and all of the key informants who generously provided their expert contributions; and design support from Alana Pirrone.





What happens to mental health trajectories across multiple disasters? A decade of data from Australia

Ang Li, Claire Leppold, The University of Melbourne

WHY DID WE DO THIS STUDY?

Many communities across Australia are facing more frequent and intense disasters. However, most research to date has focused on a specified single disaster event and recovery from one disaster at a time. There was a need to understand the **long-term effects of experiencing multiple disasters** to identify any risk and protective factors, and to inform approaches to supporting disaster recovery.

We conducted this study to **examine the mental health effects of experiencing multiple climate-related disasters** by tracking individuals before and after each disaster.

WHAT DID WE DO?

We analysed Australian data (2009–19) from the nationally representative Household, Income and Labour Dynamics in Australia (HILDA) survey. Our study included data from **1,511 people who experienced at least one disaster**. We tracked them from the year before the first disaster, at the first disaster, and, where applicable, each subsequent disaster, and a few years after each disaster. For comparison, we also included 3,880 people who did not experience disasters during this time but shared similar demographic, socioeconomic, health and place-based characteristics.

We measured whether respondents had experienced a climate disasters based on data about whether their home had been damaged by a weather-related disaster (for example, flood, bushfire or cyclone) in the previous year. Mental health outcomes were measured using a general indicator of mental health and wellbeing (the 5-item mental health inventory) and psychological distress (the Kessler Psychological Distress Scale).

WHAT DID WE FIND?

Mental health decline after experiencing climate disasters

Mental health outcomes were measured with the **5-item mental health inventory** where higher scores (on a scale from 0–100) indicate better mental health.

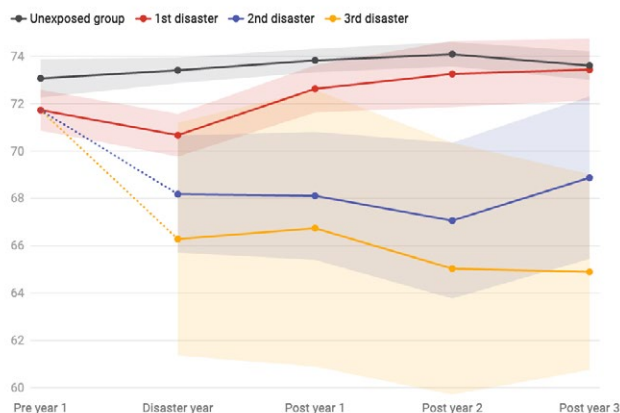


Chart: The Conversation • Source: Ang Li, Claire Leppold, "Long-term mental health trajectories across multiple exposures to climate disasters in Australia: a population-based cohort study" • Get the data • Embed • Download image • Created with Datawrapper

Our results show that **mental health declines become more severe with repeated disasters**. This graph plots the mental health trajectories for everyone in our study who experienced at least one disaster, and the control group who did not experience any disasters. We looked at maximum of three disasters in the study due to data availability.

Experiencing **one disaster led to a decline in mental health** during the disaster year, followed by a recovery to pre-disaster levels. However, with repeated disasters, mental health trajectories declined further and it took longer to recover to pre-disaster levels.

Experiencing an additional disaster close to a previous disaster (for example, one or two years apart) was linked to greater mental health declines than disasters that were spaced further apart.

Risk and protective factors:

- Social support was consistently a protective factor, regardless of the number of disasters someone experienced
- Having a long-term health condition or disability consistently increased the risk of poorer mental health, regardless of the number of disasters someone experienced
- Some risk factors became stronger with each disaster experienced. Households with lower income, those in rural areas, and younger people appeared to experience greater effects of cumulative disasters

WHAT DO THESE FINDINGS MEAN?

Repeated disasters, especially when they occur in close succession, can lead to increasingly severe effects on mental health. To support people through multiple disasters, we need to transform the way we think about disasters to go beyond a focus on 'single events'.

- Ensure that disaster recovery programs are not based on the premise of a single disaster, but instead recognise how people and communities can be affected in **cumulative ways across multiple disasters**
- Consider **targeting communities experiencing disasters** in quick succession for further support
- In health, housing, and social support interventions, recognise the potential for **cumulative stressors**
- Previous research has recommended that mental health support be provided by **government for 5 years after a single disaster**, and the present findings suggest this should be potentially increased in settings where two or more disasters have occurred
- Mental healthcare should be part of ongoing discussions to **update health systems to improve the provision of services** to address the health risks of disasters



Contact: Ang Li, University of Melbourne, ang.li5@unimelb.edu.au

Scan to access the full article





equip.

HELPING PREPARE RURAL COMMUNITIES
FOR
NATURAL DISASTERS

ABOUT EQUIP

Equip is a community-led program that builds psychological preparedness for disasters. It strengthens local connections, supports mental wellbeing, and helps communities feel ready for future challenges. Equip is delivered in partnership with rural communities across New South Wales, Western Australia and South Australia.

"I felt really good afterwards. I thought oh yeah, that's very worthwhile".

Participant from pilot study.

WHY IT MATTERS

- Disasters are increasing with climate change.
- Mental readiness improves recovery.
- Strong social ties build community resilience.
- Psychological support is often overlooked.
- Prepared communities cope better and feel more in control.

PILOT STUDY RESULTS



Program Modules

1. Working Together
2. Protecting your home and Family
3. Feeling Emotionally Prepared Part 1
4. Feeling Emotionally Prepared Part 2
5. Well-being, burnout, facing stress and challenges
6. Bringing it all together
7. Future Planning



Current Progress

- Successful pilot study completed
- 9 rural sites selected
- Community connector selection and onboarding begun
- Local advisory committee selection begun
- Workshop materials in development
- Program delivery starts 2026

Research Design

- 5-year national research study
- Step-wedge trial across 9 rural sites
- Community-led, co-designed workshops
- Mixed-methods: surveys and interviews.
- Measures psychological, social, and community outcomes.

Expected Outcomes

- Increased psychological preparedness
- Stronger social connections
- Improved community confidence
- Better coping during disasters
- Sustainable, community-led resilience practices.

Ph: 02 67735508 E: equip@une.edu.au Web: www.une.edu.au/equip



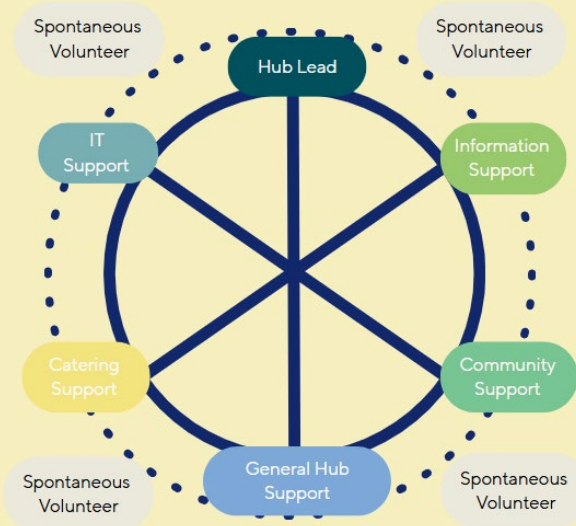
COMMUNITY SUPPORT HUBS

enabling local action and coordination

Adelaide Hills Council co-designed a project with community and State Government to establish a network of community support hubs (CSH).

CSHs are managed and run by local volunteers who build connections with individuals, community groups/services, councils, and emergency services to help understand local risks, prepare for emergencies, and support each other.

CSHs open in halls, churches and other community buildings on an as needs basis, and during the year to support community preparedness.



Critical to the project was:

- Empowering and supporting local communities by building capability, promoting community organisation governance, and providing readily available resources
- Aligning with State agency and emergency services arrangements
- Establishing awareness and building support in council
- Managing risk, related to community volunteers and council business, while empowering communities to act

CSHs may open to support their communities:

- during events such as extended power outages or periods of extreme heat
- after local emergencies such as storms, bushfire or flood

With the support of council and working collectively as a network, two CSHs were established with an additional seven in progress.

Available e-resources:

Factsheets

1. Purpose
2. Governance/Insurance
3. When to open and close
4. Building community

- CSH Plan Template
- Roles and responsibility cards
- Media pack



Adelaide Hills Council was supported by BRM Advisory to deliver this project.

CONTACT:

Karla Billington

Associate Director, BRM Advisory

Miranda Hampton and Sophie Millstead

Community Resilience Officers, Adelaide Hills Council



[LEARN MORE](#)



State Recovery | Strategy and Policy

Post-Disaster Temporary Accommodation Decision Support Tool



The challenge

After a disaster, quick decisions are needed about short-and medium-term accommodation options for displaced people.

It can be difficult to rapidly evaluate options against place-based, logistical and socio-cultural considerations, whilst having confidence that technical and regulatory requirements are also satisfied.



The solution

A Decision Support Tool that defines mandatory requirements and minimum performance requirements for short and medium term accommodation and is populated with technical data about available accommodation and housing types to enable preliminary assessment of accommodation options against the defined requirements.



Searchable

Users can search the qualities of accommodation types using filters



Portable

Tool is built in Microsoft Excel to suit offline use and sharing between users



Adaptable

Users can add new products, update date and incorporate new criteria and filters

How we developed the Tool



Defined performance requirements

7 mandatory requirements were defined for safety, health and amenity, which are applicable to all accommodation types. Additional **minimum performance requirements** were identified for compliance with relevant legislation, regulations and codes. These requirements vary according to short-or medium-term use (in WA defined as less than 2 years or more than 2 years).



Identified options for review

16 accommodation types were identified for assessment against the requirements. A dataset was collated using a 'typical' sample product for each type to enable assessment and comparison. Additional accommodation types and products can be added to the Decision Support Tool by the user.



Conducted compliance assessment

A long list was established, using pass/fail criteria in the tool to assess each accommodation type against the mandatory requirements. The long list was further scored against the minimum performance requirements for short-and medium-term accommodation, resulting in an **initial short-list of 9 accommodation types**. Two types were assessed as suitable for short-term use only, 6 are potentially suited for short-or medium-term use and one is only suited to medium-term use. New types or products, when added, will be assessed against the same requirements.



Decision Support Tool



Developed Multi-Criteria Assessment

A Multi-Criteria Assessment Calculator was built to support analysis of available products in terms of cost, amenity, time to install and other user specified performance requirements.



Created filters for user requirements

42 filterable fields were identified to enable users to further customise the short-list to take into account site and user specific requirements.

How to use the Tool

1 Filter accommodation types based on project and user needs

Determine if short or medium-term accommodation needed

Specify performance requirements for the context, site and user needs

Define supply, installation and servicing constraints

Generate a shortlist of suitable accommodation types

2 Go to market and evaluate available products for shortlisted accommodation types

Engage with market to identify current available products

Enter product data into tool

Evaluate products with Multi Criteria Assessment Calculator

Identify preferred solution(s)

Find out more

Scan the QR code below to read the *Emergency Accommodation Options Decision Support Tool User Manual*



The Volunteer Hub Chatbot

Leveraging AI for volunteer engagement and efficiency

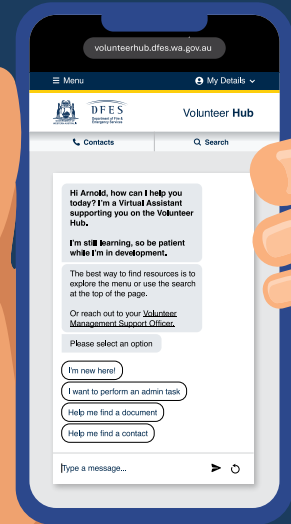
A first look at a smarter service experience

The Volunteer Hub (the Hub) is regarded as the single source of information for emergency service volunteers, connecting them to the Department of Fire and Emergency Services (DFES).

It is an essential resource for them to perform critical work. Launched back in 2019, the Hub has grown significantly and is now accessed by around 20,000 volunteers across the State. And that means communication and responsiveness are more important than ever.

The adoption of chatbot technology was recognised as a key opportunity for the Hub, contributing to an agile digital platform that anticipates and responds to changing volunteer needs and communication preferences.

This will allow DFES to better support our emergency services volunteers, ensuring they can efficiently obtain the information necessary to perform their roles.



Launched
3
September
2024



315 conversation flows
▶ 38 help me find a contact
▶ 122 help me find a document
▶ 88 new user support
▶ 51 perform an admin task



812
interactions



Content support
▶ 34 mental health and wellbeing resources
▶ 76 training support
▶ 232 operational activities support



308
FAQ requests

*Data is valid as of 25 May 2025.



How it all works

Interaction with natural conversation flow

Natural language processing and machine learning

Combines volunteer interactions and purpose-built FAQ database

Monitors real time conversations to improve accuracy



Availability

24/7 access to information and assistance.



Scalability

Able to handle a large volume of requests simultaneously, even during extreme surges (such as the high-threat season).



Consistency

Providing consistent responses to volunteer inquiries when it's needed most.



Efficiency

Improving responsiveness to requests with low impact on resourcing.



Inclusive

Able to support multiple languages, catering to our linguistically diverse volunteers.

The benefits of chatbot AI technology

The results of this trial will enable DFES to enhance its digital service delivery, now and into the future.

For more information, contact:

Andrea Dinse
Volunteer Hub System Coordinator, Strategic Volunteer and Youth Programs, Department of Fire and Emergency Services
P: 0427 936 862
E: VolunteerHub@dfes.wa.gov.au



Volunteers registered with DFES can access the Volunteer Hub by scanning the QR code.

dfes.wa.gov.au

LEADING FOR BETTER MENTAL HEALTH

Team leaders can be a protective factor for wellbeing, or they can cause harm.



IDENTIFIED A GAP

THE PROBLEM

Conversations with the Learning Network identified a lack of development for team leaders as a barrier to psychological safety in the workplace.

PROGRAM OBJECTIVES

To provide team leaders sector wide specific and more consistent development to support them to foster psychological safety.

EVIDENCE GATHERING

- **Major reports and enquiries** called for better support for frontline leaders.
- Understand leading practice through **a review of leadership literature.**
- **Scan of existing agency** hosted leadership programs.
- **Conversations with team leaders.**



TRANSLATE KNOWLEDGE

TRANSLATE EVIDENCE INTO A NEW APPROACH TO LEARNING

- Not the usual 'sit and listen' training program
- Access to experts who merge leadership and mental health concepts
- Focus of psychosocial hazards
- Focus on leadership behaviour change
- Coaching support
- Practice, reflect and review

DESIGN

- Informed by evidence.
- Co-design workshops with Learning Network.
- Collaboration with subject matter experts
- User-testing to finesse.



PROGRAM DELIVERY



WHO IS IT FOR?

New and emerging middle managers with responsibility for a team of people.

OBJECTIVES

1. Understand what is required to lead and nurture a mentally healthy workplace
2. Build confidence and capability to improve mental health in the workplace.
3. Help to mitigate psychological safety issues.

ACTION LEARNING APPROACH

1. Delivered over 4 days (2 x 2 days) with an 8 week gap in between for workplace practice and reflection.
2. Coaching to apply learning to a address a psychological safety issue.
3. Benefit from peer-to-peer learning and support.

OUTCOME

Pre and post program evaluations demonstrate an **increase in the confidence and competence of team leaders in tackling mental health conversations** and issues with team members. Practical workplace experiments demonstrate **application of learning and tangible skills development** leading to improved psychological safety.

FIND OUT MORE

Contact ESF to discuss how the program might be applied for your organisation.



Our journey towards reconciliation

Fire Rescue Victoria (FRV) began its reconciliation journey in 2020, launching our first Reflect Reconciliation Action Plan (RAP) in December 2022.



Building strong foundations

Launched Reflect RAP

Leadership learning through storytelling and listening

Awareness activities for National Reconciliation Week and NAIDOC Week

Established a RAP Implementation Group

Designed tailored initiatives based on data and what mattered to our people

Embedded artwork in places and ways of working

Appointed an Aboriginal Community Co-Chair to our RAP Implementation Group

Mapped relationships to understand our sphere of influence

Released an Aboriginal Engagement and Cultural Protocol Guide

Appointed an Aboriginal Engagement Officer

Looking ahead

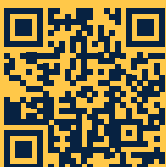
Expand cultural safety and awareness training and learning to build everyday trust

Develop our Innovate RAP to drive systemic change

Strengthen the attraction, recruitment, and development of Aboriginal and Torres Strait Islander peoples

RECONCILIATION PILLARS

- Respect
- Relationships
- Opportunities
- Governance



Learn more about our commitment to reconciliation

frv.vic.gov.au/frv-policies

'From across the land'
Artist: Samantha Richards,
Wurundjeri and Dja Dja Wurrung.



**FIRE
RESCUE
VICTORIA**

Utilising the voice of the community

Key lessons in multicultural fire safety resource development



Background

Victoria's multicultural diversity demands inclusive fire safety education that reflects the languages, cultures, and experiences of all communities. Our messaging must evolve to engage and protect all communities.

Process

Community roundtables gave us valuable insights into how our resources were being received. By collaborating with language speakers across 12 languages, we created culturally relevant videos that truly resonate with diverse communities.

Learnings

- Working with multicultural communities takes time and investment from your agency — it's not quick.
- Our community have a voice in this space and should be actively involved in the development of resources.
- End user testing is vital to ensure that resources make sense to the audience.



Proficiency in English (census Victoria 2021)

1.7 million people speak a language other than English

285,874 people speak a language other than English not well or not at all

6,503,494 total population

Victorians:

come from more than **300** ancestries
speak more than **290** languages and dialects
follow more than **200** faiths



For more information on this project:

Ellisa Bourne E.Bourne@cfa.vic.gov.au
Ruth Harley Ruth.Harley@frv.vic.gov.au



GIVIT

Rapid return to Country and post-disaster growth through community collaboration

Wujal Wujal Flood Recovery Project

GIVIT was activated by the Queensland Government to manage donations of essential goods and services for people impacted by Tropical Cyclone Jasper in Far North Queensland in late 2023.

Residents of the discreet Indigenous community of Wujal Wujal were evacuated to Cooktown and Cairns following Tropical Cyclone Jasper, with most buildings and infrastructure inundated by the flood waters. GIVIT was engaged to manage donations for impacted residents as part of the interagency Wujal Wujal Housing Return Working Group.

This project was designed to allow Wujal Wujal residents to return to Country as soon as possible, as well as address vulnerabilities that existed within the community before the disaster occurred.

"Everyone in Wujal Wujal now has a bed to sleep in and access to a washing machine, which was not the case before this disaster occurred," Christina Spehr, GIVIT Head of Engagement.



Christina Spehr with QLD Police Emergency Management and Kate Hams from QLD Community Recovery

Return to Country within six months

By working in partnership with nine agencies, including five Indigenous organisations, two state government departments and the local council, GIVIT was able to ensure that relief was delivered in a culturally appropriate way to achieve the joint six-month housing return plan.

GIVIT adapted its standard service delivery model through a place-based approach that responded to the unique needs, cultural context, and recovery priorities of the Wujal Wujal community. Recognising the importance of trust, local leadership, and tailored support, GIVIT worked closely with Wujal Wujal Aboriginal Shire Council, Cape York Partnership and Cooktown District Community Centre to assist residents while displaced and to re-furnish 96 social houses. This included providing 'Welcome Home Packs' with bed linen, kitchen essentials and cleaning products as well as beds and whitegoods.

These donations improved living conditions for much of this community beyond pre-disaster standards and allowed the entire community to return to Country in the unprecedented time frame of six months.

The Wujal Wujal Flood Recovery Project delivered post-disaster growth and improved living conditions beyond pre-disaster standards.



8,870+
Goods and services



96
Social houses re-furnished



109
New fridges



96
New washing machines



330
New bed linen packages



444
Kitchen essential item packs



800
Local grocery vouchers



"GIVIT gave me back some belief that Australia was generous. It gave me the belief that there is humanity out there," Aunty Audrey Deemal from Cape York Partnership speaking about the Wujal Wujal Recovery.

Aunty Audrey Deemal of Cape York Partnership & Temiah Bond



GIVIT.org.au

PROPERTY SPECIFIC FLOOD CHARTS

COMMUNITY-LED FLOOD RESILIENCE ✓

PROBLEM: When an Emergency Flood Warning is issued it includes a local peak flood level... Residents do not know what will happen at their own home. They do not have the right information to prepare and act.

SOLUTION: PROPERTY SPECIFIC FLOOD CHARTS use public survey data to 'translate' the Emergency Flood Warning by giving the 2 essential pieces of information: Flood Level at Boundary & Flood Level over Floor. MCRA wants a National Roll Out.



2022 Flood Event

The Maribyrnong River in Victoria flooded in a 2% AEP flood event in October 2022. Over 600 homes were inundated and it displaced around 1500 people along the Maribyrnong River. Most properties were within 8 km of the centre of Melbourne. It was the largest natural disaster in metropolitan Melbourne in over 50 years. Recovery is ongoing.

MCRA's Team

Madeleine MF Serle, President
Dr Anna Roberts, Vice President
Dr Faye Bendrups Emergency Management Adviser
Geoff Crapper, Hydrological Adviser
Bec Ferraro
Pauline Ashton
Jen Chivilo

MCRA's team blends lived experience of the Maribyrnong Floods and specific expertise across Emergency Management, Hydrology, Water & Environment Resource Economics and Legal Governance.

Project Based Advocacy

MCRA, ie the Maribyrnong Catchment Resilience Association Inc is 'Project Based'. This is a unique model to address major flood risk in the lower Maribyrnong River Catchment in Victoria. MCRA brings forward smart ideas and potential solutions for public debate and consideration with other stakeholders. MCRA has a vision for 'Whole of Catchment' urban adaptation and flood resilience for communities at major flood risk along the Maribyrnong River. To take the tragedy of the 2022 Flood Event and grow towards a better, more prosperous future beside the beautiful 'Mirrangbamurn' River. Our Projects follow our 3 key advocacy areas:

EMERGENCY MANAGEMENT

- Property Specific Flood Charts - We launch our call to return and re-engineer PSFCs in August 2024

MITIGATION

- Community Consultation Partner - Melbourne Water / Jacobs - Mitigation Solutions Study 2025

INSURANCE REFORM

- BUILTresilient - Build Back Better project to showcase 'best practice' residential flood resilient design in Maribyrnong

MCRA MARIBYRNONG
MITIGATION

BUILT
RESILIENT

Embracing Radical Transformation: The EV Platform Harnessing the Power of Community in Emergencies

The Emergency Volunteering Platform reimagines how we respond to crisis by shifting from a reactive approach to more proactive, inclusive and community driven solutions. The NDRR Grant funded project supported upgrades to the Emergency Volunteering Platform and helped develop strategic advice and implementation across WA.

What this means for future emergencies

The Emergency Volunteering platform responds to all four National Disaster Risk Reduction Framework Priorities. It reduces systematic vulnerabilities within our societies through understanding risk, recording and increasing opportunities for volunteer collaboration, improved accountable decision making, and broadening ownership of tasks to build resilience at the community level.

The platform has the capability to facilitate inter-agency collaboration, break down traditional silos and foster cross sector partnerships to create a systematic change that allows emergency managers to not only promote compliance with relevant standards, and build stronger networks of support to collaborate, unite and embrace diversity of thought to prepare for future crisis so that the local communities feel connected to the emergency management organisations in a meaningful way.

For volunteers

We appreciate that in times of need, Western Australians want to help.

Anyone can become an emergency support volunteer and be part of your community's effort to recover in times of need. You don't need any specialist skills, just a hand in the air that says "I can help".

- ☒ Register your details
- ☒ We share with registered organisations
- ☒ Organisation contacts you

Contact us

For more information contact
Dr Sumayyah Ahmad sumayyah.ahmad@uwa.edu.au | sumayyah@curtin.edu.au
Volunteering WA via info@volunteeringwa.org.au

For organisations

Local community groups and organisations play a vital part in the recovery phase of an emergency.

Organisations seeking to recruit volunteers during or following an emergency, can register to access community volunteers in their region.

- ☒ Register your organisation
- ☒ Receive volunteer details
- ☒ Contact volunteers

Our impact

124

roles suitable for emergency volunteering listed in WA (a 2000% increase from the beginning of the project)



Supported state priority action areas

- Community Focused Resilience
- Knowledge and Information Sharing
- Vulnerable and At-Risk Communities
- Fostering Individual Responsibility
- Broadening the Emergency Volunteering Ecosystem



1.8 million

views for our community awareness campaign



Harnessed lived experiences of volunteers and organisations

from recent emergencies in WA to identify gaps in existing emergency management and contribute to knowledge and information. Read the report at www.volunteeringwa.org.au.



Developed and shared strategic advice and training materials

including three modules, ten information sessions, 14 presentations, and various other resources shared with volunteer organisations, local governments, and volunteer centres across Western Australia

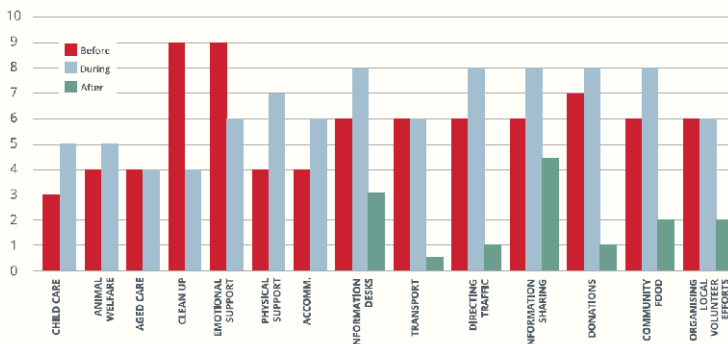


Built relationships

with existing and new partners including Salvation Army, Main Roads WA, City of Busselton, Albany & Regional Volunteer Service, WACOSS and WALGA

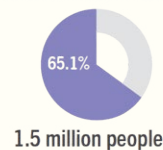
When Spontaneous Emergency Volunteering is commonly needed

Common groups of tasks performed by Spontaneous Volunteers before, during and after an emergency occurs:



Increasing numbers of people are choosing to volunteer in casual ways that support their desire to contribute their time and skills while working around the other aspects of their lives

All volunteers (WA residents aged 15 and over)



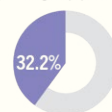
1.5 million people

Informal volunteers (as a percentage of population aged 15+)



975,000 people

Formal volunteers (as a percentage of population aged 15+)



742,000 people



Beyond Whisper Networks: How Community Communication Ecologies Evolve During Disasters



Susan Atkinson,¹ PhD Candidate, NHRA Scholarship Student

¹ News & Media Research Centre, University of Canberra, Australia

Mapping Communication Evolution: From Individual Actions to Sustainable Community Systems in Disaster Response

As climate change intensifies disasters, understanding multi-level communication becomes crucial. While official emergency agencies develop protocols, communities create their own information-sharing networks that evolve from individual actions to group coordination and eventually to community-wide systems. This research investigates how these communication ecologies develop, persist, and interface with official systems.

Multilevel info-sharing networks

Emergency services organisations are not necessarily the primary sources of information for people in a disaster. The public often takes an active role when disaster strikes, and affected individuals and groups are sharing information and creating their own informal and formal networks, thus creating multiple levels of information sharing.

Theoretical Framework

Communication Infrastructure Theory (CIT)*
Social Capital Theory

This research integrates Communication Infrastructure Theory (CIT) and Social Capital Theory to examine how community communication systems evolve during disasters:

- CIT examines how neighbourhood storytelling networks and communication resources enable information flow; Individual information-seeking and sharing behaviours
- Social Capital Theory explores how bonding (within groups), bridging (between groups), and linking (with authorities) relationships facilitate community resilience;
- Together, these frameworks explain both the structural and relational aspects of disaster communication.

Methodology

- A qualitative approach, 'grounded theory informed' with 19 interviews across 3 disaster-affected sites
- Purposive sampling of those with visible community response roles

Analysis conducted across three levels:

- Individual information-seeking and sharing behaviours
- Group formation and information co-creation
- Community-level communication infrastructure and integration with official systems

Key Findings

Individual Level: Information intermediaries emerge as critical nodes, combining multiple technologies and trusted sources to navigate complex information landscapes.

Group Level: Information-sharing groups form through crisis-triggered, experience-driven, or hybrid processes, developing multi-channel communication strategies.

Key Findings (cont.)

Community Level: Sustainable communication systems develop through information hubs, physical/digital infrastructure, and evolving trust networks.
Interface Challenges: Community systems struggle to integrate with official emergency management despite demonstrated capabilities.

Implications

1. Need for inclusive crisis communication planning
2. Map community communication assets and leverage information intermediaries
3. Foster collaboration between official agencies and community capacities
4. Integrate top-down expertise and bottom-up perspectives
5. Recognise and support the natural evolution of communication systems from individual to community level
6. Develop policies that formally acknowledge community communication capabilities during emergencies

* Kim, YC., & Ball-Rokeach, S.J. (2006). Civic Engagement from a Communication Infrastructure Perspective. *Communication Theory* 16 (2006) pp. 173-197



Further information

For additional information scan the QR code or contact:

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Digital Cognitive Behavioural Therapy Treatment for Insomnia, Nightmares, and Posttraumatic Stress Disorder Symptoms in Survivors of Bushfires: Pilot Randomised Feasibility Trial

Fadia Isaac¹; Britt Klein^{1,2}; Huy Nguyen²; Shaun Watson¹; Gerard A Kennedy³

1 Institute of Health and Wellbeing, Federation University, Ballarat, Victoria, Australia

2 Health Innovation and Transformation Centre, Federation University Australia, Mt Helen, Victoria, Australia

3 School of Health and Biomedical Sciences, Royal Melbourne Institute of Technology University, Melbourne, Australia

The trauma of bushfires leads to the development of sleep and trauma symptoms. Accessing mental health services in communities subjected to natural disasters is challenging. Therefore, a brief, digital, self-paced intervention was developed to ensure timely access to treatment.

Background

Insomnia, nightmares and PTSD are highly prevalent in bushfire survivors. In a sample of 126 participants, 49.2% of the sample reported clinical insomnia, 28.7% reported nightmares, and 77.88% reported PTSD symptoms.¹ Research suggests that treating sleep disorders in parallel with trauma symptoms leads to better outcomes in terms of both improved sleep and also reduced trauma symptoms.²

Digital therapies are becoming more popular and are in high demand given the shortage of well-trained psychologists particularly in remote locations. Sleep Best-i is a digital, self-paced intervention that has been specifically designed for the treatment of insomnia, nightmares and PTSD in bushfire survivors.

Method

In total, 30 survivors of bushfires were allocated to either the treatment group (n=16, 53%) or the waitlist control group (n=14, 47%) in a sequential manner. Participants' ages ranged from 18 to 79 years, with a mean age of 52.50 (SD 16.26) years. The cohort consisted of 63% (19/30) female and 37% (11/30) male participants.

The intervention

Sleep Best-i is a 6-module treatment: (1) Psychoeducation about sleep, (2) sleep scheduling, (3) cognitive restructuring, (4) Trauma, PTSD and flashbacks, (5) Nightmares, and (6) Relapse prevention.

Results

This study used intention-to-treat analysis as a primary analysis and per-protocol analysis as a secondary analysis.

Figure 1. Change in primary outcomes (ISI, NDI, PCL) over time

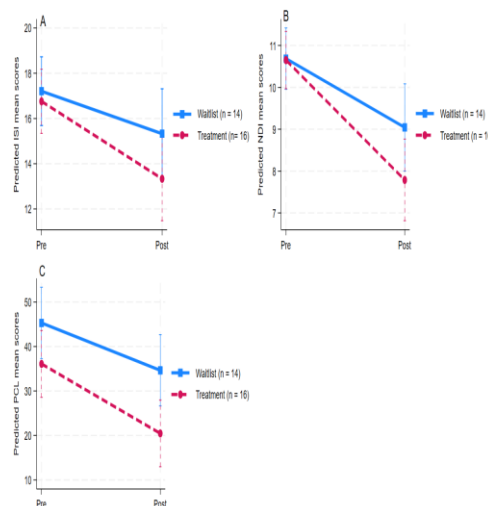


Figure 1 shows that the intention-to-treat analysis revealed significant improvements from pre- to post-treatment (main effect of time), with a 1.64-point reduction ($P=.001$) on the Nightmare Disorder Index (NDI)³, and 10.64-point reduction ($P=.009$) on the PTSD Checklist for DSM-5 (PCL-5)⁴ at the postintervention time point. No significant changes were observed in insomnia symptoms as measured by the Insomnia Severity Index (ISI)⁵. However, at the 3-month follow-up assessment, insomnia, nightmares, and PTSD symptoms were significantly reduced. The per-protocol analysis revealed similar results.

Conclusion

Digital, self-paced sleep interventions can be a viable alternative when mental health services are inaccessible.

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4. Weathers, F. W., Litz, B. T., Keane, T. M., Palmieri, P. A., Marx, B. P., & Schnurr, P. P. (2013b). The PTSD Checklist for DSM-5 (PCL-5). Scale available from the National Centre for PTSD.
5. Bastien, C. H., Vallières, A., & Morin, C. M. (2001). Validation of the Insomnia Severity Index as an outcome measure for insomnia research. *Sleep Medicine*, 2(4), 297-307.



This poster contains identical reproductions of content from the following published article:

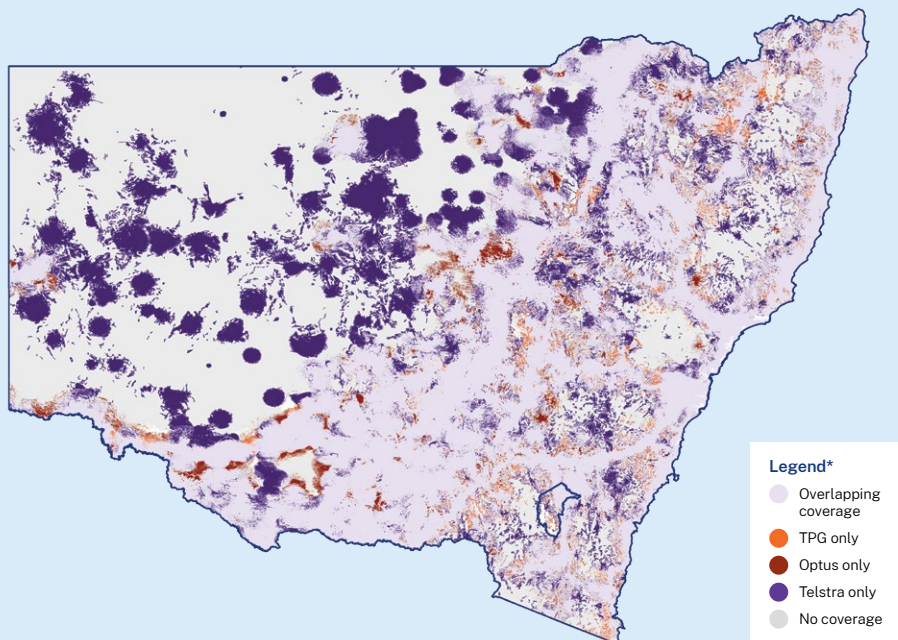
Isaac F, Klein B, Nguyen H, Watson S, Kennedy GA. Digital Cognitive Behavioral Therapy-Based Treatment for Insomnia, Nightmares, and Posttraumatic Stress Disorder Symptoms in Survivors of Wildfires: Pilot Randomized Feasibility Trial. *JMIR Human Factors* 2025;12:e65228. doi: [10.2196/65228](https://doi.org/10.2196/65228) PMID: [40085843](https://pubmed.ncbi.nlm.nih.gov/40085843/)

Mass mobile outages: a coordinated response

Mapping single carrier reliant communities across NSW

The availability of mobile services during an emergency is **critical to public safety**.

In NSW there are 3 Mobile Network Operators (carriers): Telstra, Optus and TPG Telecom (Vodafone). Other mobile operators sell services that use one of these networks.



Network outages can be caused by natural disasters, infrastructure damage, power outages, congestion and other reasons.



Single carrier reliant communities are areas where mobile coverage is provided by only one carrier. These communities are at **greater risk of becoming a community in isolation** if a mobile network outage impacts the single carrier they rely upon.



Areas with overlapping mobile coverage by 2 or more carriers are at lower risk of isolation during a single network failure. Users who lose service from their primary carrier in these areas can still make **SOS Only** calls on an alternative network via an automatic process.

The impact of isolation

Network outages in single carrier reliant communities can **impact the operations of emergency services**. They can also **isolate individuals**, cutting off their ability to:

- ⊗ Seek emergency assistance via Triple Zero
- ⊗ Receive emergency alerts and warnings
- ⊗ Access critical information and essential services
- ⊗ Contact family and friends.

This can be **particularly severe in regional, rural and remote communities**, where alternative means of connectivity may be limited.

Spatial data to understand risk

We use **geospatial intelligence tools**, including our Joint Intelligence Management System, to analyse and manage risks to telecommunications infrastructure.

We have also created a **Suburb Coverage Profile Tool** that provides an overview of each suburb in NSW and **identifies sensitivities** to single carrier outages.

Our spatial data sets show areas with:

- Single carrier only coverage
- Overlapping coverage
- No coverage.

These maps can be overlaid with **infrastructure data**, key emergency services locations and near **real-time emergency information**, such as fires near me.

Our role during an outage

NSW Telco Authority leads the **Telecommunication Services Functional Area** to protect public and commercial telecommunications infrastructure.

Under NSW emergency management arrangements, we work with government agencies and emergency services to **coordinate resources** and with impacted carriers to **assist in the restoration of services**.

Collaboration to improve emergency response

Identifying at-risk communities is **critical to preparing for emergencies** and **enabling the operations of emergency services** in these areas.

NSW Government agencies and emergency services can **integrate our spatial datasets** into their own geospatial platforms.

This helps to **minimise the impacts on communities** across NSW at risk of losing mobile coverage.

Next steps

During an emergency event, **live outage data in real time is required** for effective decision-making.

NSW Telco Authority is continuing to advocate for real-time carrier data sharing, including **live network coverage and outage information**.

* The single carrier reliant communities assessment is based on current data provided by carriers to the ACCC.

Complacent Communities Conundrum

Building a collaborative culture for proactive bushfire resilience

"The City of Busselton embarked on an 18-month journey to reimagine bushfire preparedness – through listening, learning, leading, and collaboration."

A Journey with Community at the Centre



Why?

- Our Bushfire Notice hadn't changed in over a decade
- Climate, development in the City, and regulations had changed
- Community values were evolving
- We needed a new approach - with the community, not just for it

"This project shows what's possible when local government walks alongside its community—not ahead of it."

The community-led process

We brought together 27 trusted local voices - from environmentalists, volunteer firefighters to community leaders and invited the broader community to shape the outcome. **This wasn't consultation - it was co-design.**

What we navigated together

- Diverse views on risk and responsibility
- Balancing simplicity with complexity
- Trust-building across sectors
- Conflicts between cost, environment, and safety

What We Achieved

- A revised, gazetted Bushfire Risk Reduction Notice
- Category-specific information sheets for tailored guidance
- Online mapping tool for residents to see what category applies to them

What's Next?

- Annual reviews with community to refine, improve and keep the Notice relevant
- A living document shaped by shared responsibility

Engagement Highlights:

- Utilised International Association of Public Participation (IAP2) level 'Collaborate'
- Community Project Group workshops
- Community surveys
- Pop-ups and drop-in information Sessions
- Karri Karrak review
- Council approval



The City of Busselton acknowledges the Traditional Custodians, the Wadandi people, and pays respect to Elders past, present and emerging.

For more
info Scan
QR code



Responding to gender-based violence with disaster law in Aotearoa New Zealand

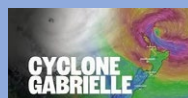
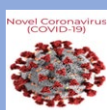
Professor Annick Masselot
Dr Silke Clausing

University of Canterbury, Faculty of Law, Institute of Law, Emergencies and Disasters

What legal mechanisms can be employed to enhance prevention and response strategies for increased GBV in disaster settings?

Gender-based violence (GBV) / family violence increases after disasters.

This increase can be attributed to heightened stressors, the creation of environments that facilitate violence, and the intensification of underlying contributing factors.



Canterbury Earthquakes 2010/2011

Sep. 2010: increase police reports ca. 53%

Feb. 2011: increase police reports ca. 47 %

Women's refuge groups report spike and severity of incidents, also **longer term**

COVID-19 Pandemic 2020

Initial spike: 22% increase in police investigation; 20% increased demand for women's refuges

Increased demand for family violence service throughout level 4-1.

Cyclone Gabrielle 2023

Feb. 2023: 60% increase in police reports

International legal framework on disaster and gender/GBV

Sendai Framework for Disaster Risk Reduction Gender Action Plan	- Increase of gender disaggregated data - Gender, age, disability and cultural perspective integrated in all policies and practices - Participation of women and other groups disproportionately affected by disaster in DRM
Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) Recommendation No. 37 on Climate Change and Disaster Risk	- Policies and programmes to address risk factors and interventions to prevent and respond to gender-based violence within DRR programmes Training, sensitization for emergency services workers and other groups on family violence in disasters - Adopt long-term strategies to prevent root causes
Recommendation No. 35 on gender-based violence against women	Examine gender-neutral laws and policies to ensure that they do not create or perpetuate existing inequalities
Committee on the Status of Women: Gender Equality and DRR 2022	- Importance of gender mainstreaming into DRM - Recognition of link between disasters and increase of gender based violence - Inclusive participation and contribution

New Zealand disaster law

	Gender reference
Civil Defense Emergency Management (CDEM) Act 2002	no
National Disaster Resilience Strategy	once (in the passing)
National CDEM Plan 2015	no
Welfare Services in an Emergency: Directors Guideline	once (in the passing)
Local Governance Act 2002	no
'Bespoke' post-disaster legislation	no



Recommendations for New Zealand's disaster law and policies?

- National strategy on disasters and GBV
- Guidelines/checklists for emergency services on GBV and disasters
- Training of emergency management in GBV issues
- Participation of GBV specialists in DRM
- Allocation of finances and resources for increased GBV related services following disaster

Confronting assumptions & the challenges of change: Children's fire education for the next generation



CFA's previous children's program, Fire Safe Kids, was developed in 2011 as a program aiming to reduce injuries and fatalities from home fires and bushfires. Since then, fire risks have changed and advances in understandings of child development have taken place.

CFA have recently developed 3 new children's offerings and to reflect the changes in fire risk, children's and school's needs, organisational culture and volunteer member capacity.

Aims:

- Update content to better address current fire risks
- Update structure to better address current learning practices
- Diversify offerings to mitigate reduced volunteer members capacity and support schools in expanding their options to learn
- Improve training to better equip volunteers to deliver the programs

Challenges:

- Crowded curriculum limits available time in schools
- Declining volunteer member pool with limited availability in-school hours
- Managing a diversity of perspectives, reservations about change, shifting assumptions about volunteers

Resulting in:

- Contemporary fire safety education programs that reflect changes in fire risk, children's and school's needs, organisational culture, and volunteer member capacity



Fire Wise Kids is CFA's new classroom-based, trained volunteer member delivered program that focuses

on teaching children vital fire safety messaging. Supported by a range of posters, cards and other resources.



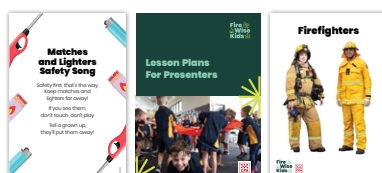
Truck Time is a community engagement program designed to educate children and families about fire trucks, firefighting equipment, and the role of CFA members. It includes hands-on activities like exploring fire trucks and equipment, hose play, and learning about fire safety.

Truck Time is a community engagement program designed to

Resources



Library of digital resources to support teachers, parents and caregivers. These include fire safety videos, lesson plans and activities for children. Other resources include key messaging stickers, family activity packs and giveaways.



Want to know more? Please get in touch



Siobhan Greene and Elissa Jans
Community Engagement — Program Development
education@cfa.vic.gov.au



Protecting our littlest

Enhancing fire safety and burns prevention in 0-4 year olds

THE SITUATION:



Young children aged 0 to 4 are at disproportionate risk of home fire fatalities and burn injuries.



The Preventable Residential Fire Fatality Report (2019) found **70 preventable deaths** of children aged 0-4. And a significant link to **socio-economic disadvantage and fire-play**.



There have been several recent tragic deaths of very young children in **residential fires in Victoria**.



Hospital admission burn injury data shows an increase in **outdoor campfires and fire pits burns**. **Scalds** are still the highest risk.



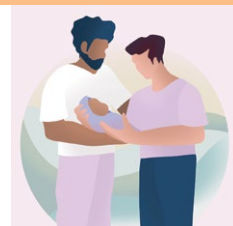
CFA and FRV's Early Fire Safe program is being redeveloped in 2025 to address this risk in partnership with Maternal and Child Health (MCH)

THE RESEARCH TO UNDERSTAND END USERS (2024):

- Maternal and Child Health, Department of Health
- Maternal and Child Health Nurses (MCHNs) survey (n= 270) and interviews (n=15)
- Parent survey (n=120)
- CFA staff who deliver Early Fire Safe interviews (n=8)
- Literature review

The findings

- ✓ MCHNs are a powerful conduit to reach parents and families. Parents validated this approach.
- ✓ The critical role of partnerships with Maternal and Child Health services.
- ✓ The need to better target socio-economic disadvantage, multicultural and First Nations parents.



In 2025: Updated program content across 6 key areas that are based on key ages and stages of babies and toddlers.

THE SOLUTION:



Partnership approach with MCH where fire safety/ burns prevention is embedded into practice

What has happened so far — to June 2025

- ✓ Multi-stakeholder Advisory Group with MCHNs, Aboriginal MCH, Victorian Aboriginal Community Controlled Health Organisation, Royal Children's Hospital, Fire Services (CFA and FRV) and Municipal Association of Victoria
- ✓ Fire safety — "having working smoke alarms where baby sleeps" now added to the Victorian MCHN Safe Sleeping Checklist as a discussion point
- ✓ Referral pathway created for MCH — Smoke alarm installation for families who need support (CFA and FRV can deliver this service)
- ✓ **Smoke Alarm** animation for parents
- ✓ Fire Services at the MCHN Conference 2024 and 2025 to speak to nurses and improve connections



The Early Fire Safe program will be updated in stages across 2025 and 2026. You can follow the Early Fire Safe redevelopment here.



It is anticipated that socio-cultural norms and values play a pivotal role in shaping the disaster response practices of both Indonesian and Australian professionals, influencing not only their engagement with formal protocols but also their interactions with affected communities and international teams. A culturally informed understanding is expected to enhance the appropriateness, acceptance, and effectiveness of disaster interventions across diverse contexts.



Natural
**Hazards
Research**
Australia

Natasa Adamovic, PhD Student

Faculty of Arts and Society, Charles Darwin University

Supervisors: Dr Rodney Eksteen and Dr Jonatan Lassa, Charles Darwin University

The Role of Socio-Cultural Practices in Shaping Disaster Response: Perspectives from Indonesian and Australian Professionals

Disaster response efforts often involve collaboration between professionals from diverse cultural backgrounds, especially during international humanitarian operations. However, the influence of socio-cultural practices on how professionals interpret, adapt, and implement disaster response protocols remains an underexplored area. Cultural norms, values, and local knowledge systems can either complement or conflict with standardized international guidelines, affecting the effectiveness and ethical dimensions of disaster interventions. Understanding how professionals navigate these cultural contexts is essential for improving coordination, building mutual respect, and ensuring culturally sensitive responses that uphold the dignity and needs of affected communities.



Australian Broadcasting Corporation. (2025, May 22). NSW Flooding Disaster: Coast Battered by Rain, Evacuations underway.

Background

This research investigates how socio-cultural practices shape disaster response strategies, with a focus on cross-cultural professional experiences. Specifically, it examines the perspectives of Indonesian professionals involved in domestic disaster response and Australian professionals who have participated in disaster response efforts abroad.

Research Aims

The aim of this study is to explore how socio-cultural practices influence disaster response approaches by examining and comparing the experiences and perspectives of Indonesian professionals responding to disasters within Indonesia and Australian professionals involved in international disaster settings.

Research Questions

This study is guided by several key research questions aimed at understanding the influence of socio-cultural practices on disaster response. Firstly, it seeks to explore what cultural paradigms Indonesian professionals consider when engaging in disaster response and how these shape their adherence to established protocols. Secondly, the research examines how these professionals navigate the complexities of working collaboratively with international teams in disaster management settings. Lastly, the study investigates the insights gained by Australian professionals through their involvement in international disaster operations, with a particular focus on how cultural awareness impacts their practices and professional approaches.

Methodology

This study employed a qualitative research design using semi-structured interviews with disaster response professionals in Indonesia and Australia. Participants were selected through purposive and snowball sampling, and data were analysed thematically to explore culturally informed practices in disaster response.

Phase one of this research has been successfully completed, involving responses from 21 Indonesian professionals representing diverse roles and perspectives within the disaster response sector. Phase two, which focuses on interviews with Australian professionals, is now approaching completion. To date, 15 interviews have been conducted, with approximately 10 remaining to finalise this phase.

Findings

The findings of this study are currently in the early stages of analysis.

However, the research aims to identify key cultural values and practices that influence how Indonesian and Australian professionals approach disaster response. Preliminary insights suggest that local customs, professional norms, and cross-cultural dynamics play a significant role in shaping response strategies, decision-making, and collaboration. The analysis will continue to explore how these socio-cultural elements inform ethical considerations, protocol adaptation, and professional conduct during international disaster deployments.



Further information

For additional information scan the QR code or contact:
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Australian Government





RAISING THE BAR: HELPING TO CREATE A SAFE, POSITIVE AND INCLUSIVE FIRE AND EMERGENCY

OUR GOAL

"Fire and Emergency New Zealand is a place where people feel they can belong. A place where they are supported to thrive, so that collectively we can deliver service to our communities and each other. We seek to provide an environment for our people that is safe, positive, and inclusive, where we are all adaptable, responsive, respectful, accountable, trustworthy and committed to service."

OUR JOURNEY



Te Kawa Mataaho
Public Service Commission

Te Kawa Mataaho | Public Service Commission review (2022) into our workplace culture and complaints handling practices found we had some way to go to address poor behaviours and achieve lasting culture change. Twenty recommendations accepted in full.



Eke Taumata Programme established to respond to the recommendations and support longer term improvements in organisational culture. Noting the Review is just the starting point for long-term improvements.



By mid-2025, more than three quarters of the recommendations complete and the rest well underway, plus focus on supporting people to maintain the changes already introduced and on identifying next steps to reach our goal.

FOUR POU (PILLARS) GUIDE THIS MAHI (WORK):

1

Building trust and increasing opportunities for engagement and influence



INVOLVING OUR PEOPLE

Eke Taumata Internal Advisory Rōpū (group): Representatives from across Fire and Emergency who meet quarterly, in person, to provide advice, information and feedback based on their knowledge and experience.

Formal consultation to seek feedback from our people on all new or updated policies and significant initiatives; key themes and outcomes from consultation reported back.

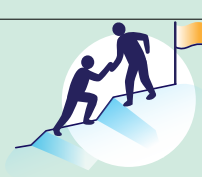
Regular engagement with the **unions and associations** representing our people, via multiple different meetings and channels.

Targeted **working groups** within specific projects to involve people directly in the development of work that will impact them.



2

Strengthening our people leadership capability



SUPPORT FOR LEADERS

Leaders play a critical role in building the organisation we want for the future, so we've launched a number of initiatives to better support them, including:

- Volunteer Brigade Leader development and review processes** with a renewable five-year term for newly appointed volunteer brigade leaders (rural and urban), plus tailored support and development plans. (Launched November 2024)
- Mastering Difficult Conversations training** to equip our leaders to address inappropriate behaviour, facilitate difficult conversations and lead effective teams – via in-person workshops, within other leadership courses and online module. (Launched June 2024)
- Volunteer Executive Officer course** updated to increase its focus on people leadership, and to ensure the course is delivered consistently to every attendee.
- Suite of leadership development programmes** for leaders at all levels aligned with our Leadership Development Framework.

In the 2024/25 year more than:

920

people attended Lead Self, Lead Teams or Lead Leaders

1000

people attended Mastering Difficult Conversations

1000

completions of Deeper Signals

3

Providing a safe, positive and inclusive environment



SPEAK SAFE @ FAIR WAY + KĀPEHU

Speak Safe @ Fair Way is a free, confidential, and independent enquiry and complaints management service, operated by Fair Way for Fire and Emergency volunteers, employees and contractors. (Launched April 2024)

- "No wrong door" approach** – regardless of what route people choose to contact Speak Safe @ Fair Way, they'll be presented with options and guided through the process.
- We are continually reviewing and refining** Speak Safe with Fair Way to ensure the entire system is working for our people.
- Fair Way also offers **Kāpehu**, a confidential coaching service that anyone at any level can contact for any reason – a safe place to get guidance about work issues, challenges and conflict. ("Kāpehu" means compass.)



4

Raising the bar on acceptable standards of conduct and behaviour



CODE OF CONDUCT

Te Tikanga Whanonga | Our Code of Conduct is a key foundation of work to create a safe, positive, inclusive Fire and Emergency. (Launched July 2024)

- Applies to all personnel** – volunteers, staff, contractors, and our Board – and helps us to make the right decisions; sets out what will happen if we act outside those expectations.
- Code of Conduct online module completion** required for all personnel – we expect all Fire and Emergency people to be familiar with the Code, so they know what's expected of them. (Launched August 2024)
- Suite of supporting policies** launched to help us take a fair and consistent approach to any Code breaches.



4300+

Module completions in the first 11 months

42%

of employees have completed module

26%

of volunteers have completed module



239

complaints reported

48

investigations

77

uses of Kāpehu

Between May 2024 and February 2025



Read Te Tikanga Whanonga | Our Code of Conduct



"Eke Taumata" is abbreviated from 'Kia eke ki ngā taumata' – to aspire to a greater level. 'Eke' means to climb or embark upon. 'Taumata' refers to a pinnacle or higher level.

Systemic Disaster Risk

Traditional risk assessments are no longer fit for purpose to understand and manage risk as the world becomes increasingly complex, uncertain and ambiguous¹.

We are heavily dependent on interconnected systems for the delivery of essential services when we need them (e.g. energy, water, food, health and education services, transport, and communications). These systems enable the safe and prosperous nation that we love and enjoy today².

Systemic risk is based on the idea that risk, arising from a policy, response action or a hazard event, depends on how the elements of the affected systems interact with each other. These interactions either aggravate or contain the overall effect of the constituent parts, creating the potential for cascading impacts on system elements far from the first impact³.

AIDR developed the *Systemic Disaster Risk Handbook* in 2021 highlighting 13 principles for integrating systemic risk thinking into policies, decision-making, and practices to support resilience and sustainability.

1. Profiling Australia's Vulnerability 2. Profiling Australia's Vulnerability
3. ONDR 2022 Systemic Risk Briefing Note



Scan to access the Systemic
Disaster Risk Handbook:



knowledge.aidr.org.au/resources/handbook-systemic-disaster-risk

1	Embrace uncertainty The changing risk context involves greater uncertainty and challenges to goals and objectives. Recognise there will be many different perspectives to be negotiated. Use inclusive governance and systems thinking to help. Do not be overwhelmed or wait for certainty before taking action.
2	Think globally, act locally Thinking globally while acting locally is a must in a growing, interconnected world. Alignment and cohesion of efforts is at the core. Acting locally is best exercised by well informed and inclusive communities. Community expertise, engagement and trust is critical to reducing disaster risks and building resilience.
3	Place-based, systemic resilience and sustainable outcomes Treat resilience as capacity building and take a community-level, place-based approach to understand the points where risk is realised, the things of value that are affected and who bears the costs. Use systems thinking to get an understanding of the dynamic, complex moving parts that make up a resilient society. Look for the points of intersection and weigh up if it is values, rules, or knowledge that enable or constrain progress and act accordingly.
4	Establish long-term sustainability goals Plan to avoid systemic failure and invest in mitigation when setting long-term sustainability goals. Inclusive governance , and investment is key to not only long-term sustainability but short-term, incremental interventions. Consider policy, domains, climate change and systemic disaster resilience as interconnected.

5	Reposition current and emerging leadership New leadership qualities are needed to meet the challenges of the future. Disasters have shown leadership can emerge unexpectedly, in traditional and non-traditional settings, motivated by passion, hope and a sense of agency. Be equipped with trusted, contemporary knowledge and be prepared to engage and educate others about systemic risk and vulnerability. Help others up-skill and be involved in the system.
6	Fit governance to the characteristics of the decision context Structures, rules, and arrangements influence whose views and priorities are considered. As the magnitude of change becomes increasingly uncertain, it is important that diverse and broad stakeholder values and knowledge are incorporated in decisions made.
7	Foster networked systemic risk cultures as a powerful, enabling force Change is happening too quickly for slow moving strategies to be effective and more frequent considerations of risk are necessary. Treat inclusive, networked risk cultures as an enabler of opportunity and invest in developing cultures attuned to the changed systemic risk context.
8	Provide access to and be transparent about decisions Ensure that diverse stakeholders have access to the decision-making process in some form. Move from transactional or competitive relationships and invest in collaboration for collective impact.
9	Treat decision-making as an active learning process Change the nature of decision-making , including the processes used. Regard decision-making as a trial, experiment, or interim measure – actively learning from doing . Act early, regularly assess and adapt continuously.

10	Re-evaluate purpose and priorities Evolve disaster risk management to include systemic disaster risk reduction and resilience. Focus on people, place, and values and be clear on purpose and objectives. Align these with local, place-based accountable decisions and longer-term time horizons.
11	Take a systems approach Use a systems approach to illuminate complex interconnections and relationships. With this understanding it is possible to select the best intervention points for action.
12	Recognise values, vulnerability, and social justice Change purpose and objectives when values change. Be transparent about why particular decisions were chosen over others and work with stakeholders to agree on the goals and objectives for reducing disaster risk.
13	Provide equitable access to risk knowledge Regularly talk about the progress of a disaster risk reduction and resilience activity. It fosters trust and participation , allowing risk owners the opportunity to accept, treat or transfer the risk. Engage and support people to understand and use risk information to more effect and avoid an imbalance of knowledge and power.

KNOWLEDGE.AIDR.ORG.AU



Australian Institute for Disaster Resilience Knowledge Centre

Welcome to the Australian Institute for Disaster Resilience's Knowledge Centre.

The Knowledge Centre aligns with the Australian Institute for Disaster Resilience's purpose of sharing knowledge and resources to enable informed decision making and action; and facilitating thought leadership through national conversations. We are proud to present over 200 posters showcasing innovative, thought-provoking, and emergent research, policy and practice currently addressing disaster risk reduction and strengthening resilience.

This year's collection of posters will demonstrate how the nation's collective work is contributing to achieving Australia's vision to enable and support various sectors to actively reduce disaster risk and limit the impacts of disasters on communities and economies.

As you travel through the Knowledge Centre you will find posters that span:

Framework Priorities

1

Understand
Disaster Risk

2

Making
Accountable
Decisions

3

Enhanced
Investment

4

Governance,
Ownership and
Responsibility

National Disaster Risk Reduction Framework

The National Disaster Risk Reduction Framework outlines a national and comprehensive approach to proactively reducing disaster risk, now and into the future.

The National Disaster Risk Reduction Framework is a multi-sector collaboration led by the National Resilience Taskforce within the Australian Government Department of Home Affairs. The framework was co-designed with representatives from all levels of government, business and the community sector.

Scan to explore

[knowledge.aidr.org.au/resources/
national-disaster-risk-reduction-
framework](https://knowledge.aidr.org.au/resources/national-disaster-risk-reduction-framework)



Second National Action Plan for Disaster Risk Reduction

The Second National Action Plan to implement the National Disaster Risk Reduction Framework was released by the National Emergency Management Agency in August 2023.

The Second National Action Plan is for all Australians – individuals, communities, organisations and sectors, and governments. By effectively coordinating and aligning action, this Second National Action Plan aims to reduce systemic disaster risk in order to create stronger, more secure and more resilient communities before, during and after disasters.

Scan to explore

[knowledge.aidr.org.au/resources/
second-national-action-plan-for-
disaster-risk-reduction](https://knowledge.aidr.org.au/resources/second-national-action-plan-for-disaster-risk-reduction)



KNOWLEDGE.AIDR.ORG.AU



Australian Government
National Emergency Management Agency



10 Years of the

Australian Institute for Disaster Resilience

Since beginning a decade ago, the Australian Institute for Disaster Resilience (AIDR) has continued to build the capability for the emergency management system as the national institute for disaster risk reduction and resilience.

National scale building capability in emergency management and disaster risk reduction started in Australia in 1956 with the establishment of the Counter Disaster College at Mt Macedon. Over time, the College evolved into the Australian Emergency Management Institute (AEMI) under the auspice of Emergency Management Australia.

AIDR was created in 2015 following the closure of AEMI. AIDR was established through a partnership of the Australasian Fire and Emergency Services Authorities Council (AFAC), Australian Red Cross, and the then Bushfire and Natural Hazards Cooperative Research Centre. AIDR's remit was sector development.

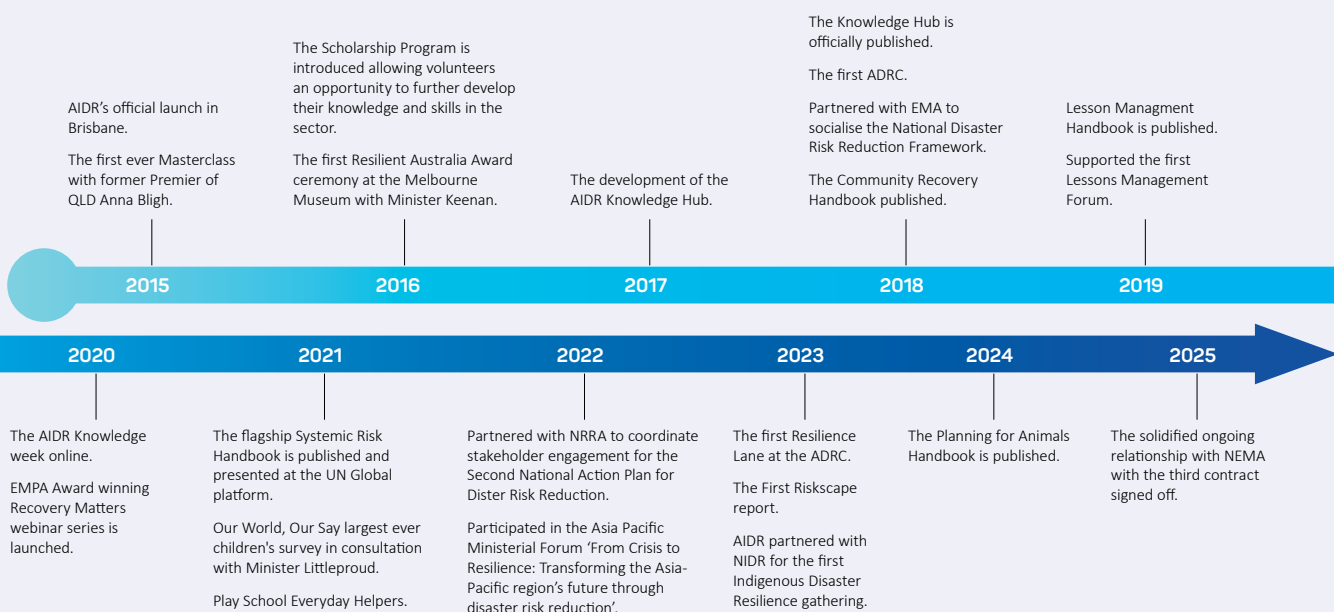
Over the intervening 10 years, AIDR has successfully delivered on building capability for the emergency management system. As we move into the next stage of AIDR's future, AFAC continues to manage this important contribution to reducing disaster risk on behalf of the National Emergency Management Agency.

OUR VISION

People have the knowledge and capacity to make informed decisions for risk reduction and resilience - so that communities, environments and systems across Australia can cope with hazards and continue to thrive.

OUR PURPOSE

Our purpose is to support organisations with evidence-informed disaster risk reduction knowledge to empower communities, and to strengthen capability and connections across communities and systems, to inspire action that reduces risk.



[AIDR.ORG.AU](https://aidr.org.au)

[KNOWLEDGE.AIDR.ORG.AU](https://knowledge.aidr.org.au)

[EDUCATION.AIDR.ORG.AU](https://education.aidr.org.au)



Australian Government
National Emergency Management Agency

Australian Institute for
Disaster Resilience



Why are disasters not natural?

We often encounter the term 'natural disaster' in conversations, media and research.

But there is no such thing as a 'natural' disaster.



Floods, heatwaves, bushfires, dust storms, earthquakes, tsunamis and storms are natural hazards.

Natural hazards only lead to disaster when they occur where people or infrastructure are vulnerable to the impacts of the hazard and the impacts exceed people's capacity to cope.¹

The term 'natural disaster' suggests that these events are caused by forces outside our control and that nobody is responsible for the impact.

But vulnerability often results from deliberate decisions like building in high-risk areas or having poor building standards. Poverty, inequality and social isolation also contribute to increased risk.²

This is because people may not have the money to live in a safer area, to build a stronger house, or to take preparedness actions. People may not have a strong social network to help them reduce their risks.

As a society, we create the conditions for disasters. Natural hazards do not choose who is more vulnerable, but we do. We can make active decisions to reduce risks and avoid disasters.³

1. National Emergency Management Agency (2023) Second National Action Plan.
2. UNDRR (2021) Time to recognise there is no such thing as a natural disaster - we're doing it to ourselves.
3. Ilan Kelman (2020) Disasters by Choice: How our actions turn natural hazards into catastrophes.

Language and terminology matters. Reframing how we describe disasters helps us be in control of the actions needed to reduce disaster risk.

TIP:

Use the language of 'disasters' or 'natural hazards.' Encourage others to do the same.

**DISASTERS
ARE NOT
NATURAL**

#NoNaturalDisasters

www.nonaturaldisasters.com

KNOWLEDGE.AIDR.ORG.AU

BUILDING LOCAL COMMUNITY RESILIENCE TO CLIMATE HAZARDS: THE LOCAL RESILIENCE PLAN (LRP) PILOT PROGRAM

Climate change poses significant threats to community wellbeing and individuals are expected to help build their, and their communities, resilience. Household action is shaped by, among other things, the policies, strategies and plans in place to respond to climate risk; yet the impact of these devices on household adaptation intentions, and the health and wellbeing of communities, is **gravely under-researched**.

The project engaged with householders participating in the City of Moreton Bay's Local Resilience Plan program, a pilot program that aims to build resilience through a novel partnership between at-risk communities and local government, where adaptation commitments are made by both parties.

We asked: *In what ways does a novel policy response to climate risk influence householder perceptions of resilience, adaptation intention, and community wellbeing.*

POLICY IMPACT ON LOCAL ADAPTATION

WHY INNOVATIVE?



Neighbourhood approach: place-based approaches are limited in coastal adaptation and management.



A partnership between local government and community: collective (infrastructure/financial) commitments to reduce vulnerability and build resilience.



New ways to share information: Address barriers to accessing information that may inform household action.



Appreciation: Opportunity to participate is highly valued
A chance to learn and be heard.



Awareness: Risk tolerance shapes engagement If no perceived risk, or acceptable risk, less incentive to engage.



Frustration: Heard by some but not all Despite feeling heard by the LRP program, decisions made across council are not always congruent with local concerns and feedback. Differing expectations on response time The program has been running for 3 years and not yet informed on-ground action.



Uncertainty: Planning timeframes misaligned 2050 & 2100 do not indicate how long conditions are tolerable or opportunities for adaptation (e.g., building renewal is ~25 years); leaving households uncertain on how and when to act.

INFLUENCE?

- Households are acting based on risk exposure, not (yet) policy engagement.
- Strong intentions to respond, yet information aligned to decision-making needs remains limited, and partnership not (yet) clearly demonstrated.
- Frustration and uncertainty impact wellbeing.

LESSONS LEARNED (SO FAR...)

- **Meet on shared priorities:** Adaptation is a challenge requiring difficult discussions; structuring discussions around local needs and concerns can support engagement.
- **Timeframes:** should be informed by decision-making needs, not risk assessment templates.
- **Share feedback widely:** Engagement without action, or action in contrast to engagement, impacts wellbeing.
- **Demonstrate a commitment to partnership:** This can be a challenge for risk adverse and resource constrained authorities.

INNOVATION IS VITAL BUT CHALLENGING. THE CITY OF MORETON BAY IS EMBRACING THAT CHALLENGE, LEARNING BY DOING, AND INTEGRATING LEARNINGS INTO SUBSEQUENT PHASES OF IMPLEMENTATION.

Carmen Elrick-Barr, UniSC
Carolyn Lambert, UniSC & QUT
Dan Wadsworth, UniSC
Annah Piggot-McKellar, QUT
Marney Teasdale, UniSC

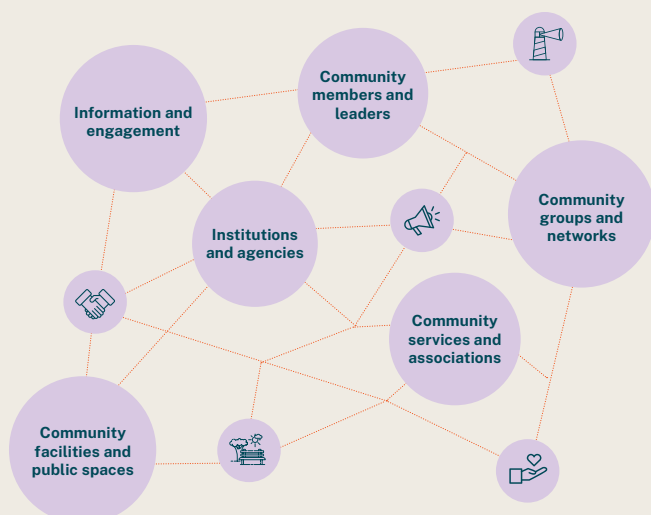
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Acknowledgements: This research is funded by University of the Sunshine Coast (UniSC) Launch Partnership program. Project partners include the City of Moreton Bay, the Queensland Local Government Authority (LGAQ), and Queensland University of Technology (QUT). The views expressed herein are those of the authors and are not necessarily those of UniSC, City of Moreton Bay, LGAQ or QUT. We would like to thank the interviewees who kindly shared their knowledge and experiences with the project team.

SOCIAL ASSETS. OUR BUILDING BLOCKS FOR COMMUNITY RESILIENCE

WHAT ARE SOCIAL ASSETS?



SOCIAL ASSETS BUILD TRUST, SOCIAL CAPITAL AND COHESION

Social assets enable us to connect to each other, our neighbourhoods, services and institutions, and decisions that affect us. They create social capital and more socially cohesive communities and places, enabling much higher levels of disaster preparedness, response and recovery.

BONDING US WITH EACH OTHER



BRIDGING RELATIONSHIPS BETWEEN DIFFERENT GROUPS



LINKING TO THE SERVICES AND OPPORTUNITIES WE NEED



"Many councils don't have community development officers anymore. We need funded community connector roles, who bring community groups and services together and enable community action."

"Spaces like community halls are so important. They allow community to come together in good times and can be used as recovery hubs after disasters, and places for information and connection."

CHALLENGES

1. Short term, grant based and competitive funding

- NGOs are funded in short term cycles, making long-term community relationships and service delivery challenging.
- NGOs compete for the same funding buckets, hindering collaboration.
- Short term funding makes responding to quick turn around, resource intensive grant applications hard.

2. Inequitable access: who you are and where you live

- More vulnerable people, communities and places often have less access to social assets than others.
- High growth areas, are impacted by slow or no delivery of social assets that connect them to community, services, jobs and decision making.

3. Leadership and value

- There is little to no legislated requirement for the delivery of local to regional social assets such as community facilities and public spaces
- There is a lack of understanding of the role and value of social assets at leadership level and across government departments.

OPPORTUNITIES

1. Community buildings that build community

- Support strategic social asset planning for local government & embed in planning policy and legislation.
- Design and deliver multipurpose, multi-use and shared spaces that can function in and out of disasters.

2. Place based planning

- Include place-based community organisations on LEMCs (these groups are the bridge between community and government).
- Support place-based planning-including funded community connector roles in councils, and localise place based plans.

3. Rethink funding

- Enable access to flexible funding pools, allowing for proactive emergency responses during an emergency.
- Funding pathways that foster collaboration and reduce competition between groups and programs supporting social capital.

PLANNING FOR, DELIVERING AND MANAGING SOCIAL ASSETS IS THE RESPONSIBILITY OF MANY

FEDERAL GOV

Funds essential social and health services and sets policy direction that drives social asset planning and delivery at the State and local level.

NGOs & GROUPS

Drives and delivers social services and programs for communities. Are the link between vulnerable people and places and government information and actions.

STATE GOV

Create the planning and policy environment for the funding, delivery and operation of many social assets, particularly in growing and changing places.

COMMUNITY

Are leaders, connectors and change makers in their own lives. Let's enable them. Listening to lived experiences strengthens local community resilience.

BUSINESS

Deliver and operate social assets. Plan and deliver new places, housing and facilities. Social enterprises, mutuals, cooperatives and business networks often invest in and lead recovery efforts.

LOCAL GOV

Plan, deliver, and manage social assets. Coordinate community interagency and engagement. A key and trusted point of connection between communities and government.

"We need training for all levels of government around the roles of social assets, the value of social capital and practical tools to help assess social assets for local social preparedness priorities."



SNOWY VALLEYS PLACE PLANS

Funded through the Bushfire Resilience Fund, Snowy Valleys Council and CRED collaborated with local community members and service providers to prepare 'Connected Community Roadmaps' - community-led Place Plans for each centre across the LGA. The Plans mapped social assets assessed their capacity to bond, bridge and link communities and places, and recommended actions to create places, spaces and networks that build stronger more socially cohesive and resilient communities.

For more information: <https://credconsulting.com.au/projects/creating-connected-communities-in-the-snowy-valleys/>



COMMUNITY BUILDINGS THAT BUILD COMMUNITY IN COBARGO

A community led, not-for-profit commercial and residential project led by DunnHillam to replace the buildings on the main street of Cobargo that were destroyed in the bushfires of December 2019. Three new buildings were designed to respond in form, scale, colour and materials to the character of Cobargo, while introducing better accessibility, multifunctionality, more generous public spaces, community connections, and bringing some much needed residential accommodation.

For more information: <https://www.dunnhillam.com.au/rebuild-cobargo>

Let's make change and build stronger connected communities together.

LINKEDIN



CREDUCATION



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CRED CONSULTING.COM.AU



EDUCATIONAL PARTNERSHIPS SUPPORTING CULTURALLY DIVERSE COMMUNITIES



BREAKING DOWN CULTURAL BARRIERS

The strategic partnership between FRNSW, the TAFE Adult Migrant English Program (AMEP), and Navitas AMEP demonstrates how educational environments can break down cultural barriers by delivering and integrating relevant fire safety education and information to multicultural communities in accessible and trusted settings.

PREVENTION AND EDUCATION

Classroom-style setups assist organisational logistics while providing flexibility for crews to adapt sessions to English proficiency levels, and a comfortable and familiar setting for students. The use of props, turnout gear and other interactive materials ensures all students can engage meaningfully with the content.



Sessions are guided by FRNSW's multicultural toolkit and the evidence-based CLEAR model.

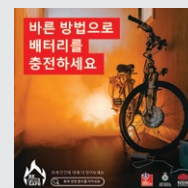
Cultural awareness
Lived experience
Engagement
Accessibility
Relationships

 **18** campuses

 **100** educators

 **4,000** students

 **20** fire stations



FOR MORE INFORMATION
ON THIS PROJECT,
SCAN THE QR CODE



TO BOOK A FREE
SAFETY VISIT,
SCAN THE QR CODE



State Recovery | Strategy and Policy

Coordinating recovery in Western Australia

A model for State Government involvement in recovery

Western Australian local governments have a legislated responsibility to manage recovery in their district. However, the scale of recovery can sometimes exceed local government capacity, particularly for smaller councils.

This model establishes clear criteria for when and how the State Government will support local governments through four escalating recovery levels (R1 to R4).

The *Recovery Level Assessment Support Tool* works alongside the model to provide emergency management professionals with clear, consistent criteria for assessing the recovery level under the Model.

	R1	R2	R3	R4
	Recovery is managed by local government	Local government manages recovery with State support	The State leads recovery coordination	The State directs recovery coordination
COMPLEXITY OF RECOVERY	Low to medium Recovery is within the capacity of local government	Medium to high Local government requires some support to manage recovery	Very high Local government needs significant State Government support to manage recovery	Extraordinary Recovery exceeds local government capacity, requires additional arrangements from the State Government
RECOVERY LEAD	Local Recovery Coordinator	Local Recovery Coordinator	State-level Recovery Coordinator	State-level Recovery Controller
ROLE OF LOCAL GOVERNMENT	Manages and leads recovery program	Manages and leads recovery program	Leads community focused and local-level recovery activities	Leads community focused and local level recovery activities
ROLE OF STATE GOVERNMENT	State agencies provide services and support through normal business-as-usual arrangements	R1 plus DFES State Recovery team and state agencies will assist with coordination support and delivery of recovery programs and activities	R2 plus state-level recovery coordination structures and groups established to support development and delivery of State Recovery Plan	R3 plus state-level recovery taskforce may be established. The State Disaster Council may be convened and National Recovery Coordination where required

How is a recovery level determined?

The *Model for State Involvement in Recovery* is supported by a *Recovery Level Assessment Support Tool*.

The Tool helps the State Recovery Coordinator to assess the appropriate level of state government involvement in disaster recovery efforts through a set of scaled criteria based on the complexity of recovery needs and capacity of local government to manage recovery.

The tool can be used at any time during the recovery process to scale up or down State Government support in line with changing community recovery needs.

Disaster Event

Recovery Level Assessment Support Tool

 Level of community and individual resilience	 Level of disruption to essential services and infrastructure, housing, public health and safety, economy and jobs, and environmental values	 Scale of coordination effort required for recovery, considering location and access to recovery resources	 Capacity of local government and state agencies to manage recovery
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Recovery level determined (R1 - R4)

 R1 CASE STUDY Perth Hills & Great Southern Storms In addition to storm debris, damage was caused to local roads and public infrastructure across multiple local governments. Services were restored quickly and recovery was managed and coordinated by local governments.	 R2 CASE STUDY Mariginiup Bushfire 18 homes were lost with many more homes, farms and agricultural businesses damaged. Recovery was led by the City of Wanneroo with State Government support to establish recovery arrangements, planning, and provide assistance to displaced people. Additional financial support was provided by the State Government for clean-up.	 R3 CASE STUDY Kimberley Floods Extensive damage to regional infrastructure, essential services and social housing. Many people were displaced and community well-being was severely impacted. The State Government appointed a Recovery Coordinator to implement a Recovery and Resilience Plan, delivered in partnership with local governments and state agencies.	 R4 CASE STUDY Covid 19 The scale of disruption suspended normal operations across local and state governments. The State Government activated disaster coordination mechanisms and appointed a Recovery Controller to lead a socially and economically focused recovery, while local governments supported community well-being and resilience.
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Youth in Emergency Services

Strengthening future responders
through engagement and collaboration

Why engaging young people matters

Volunteers form the backbone of the Department of Fire and Emergency Services (DFES) in Western Australia, accounting for 95% of the frontline responders to emergencies such as fires, floods, cyclones, and earthquakes. DFES volunteers attend over 7,500 incidents annually, ensuring that communities stay safe during times of crisis.

However, with an ageing population and evolving emergency service demands, the sector faces challenges in sustaining an effective volunteer workforce. Attracting and retaining younger volunteers is crucial for the long-term success and resilience of the sector.



“Being a cadet isn’t just something to pass the time after school – it’s something real, something meaningful. For many of the instructors on this camp, this isn’t just a job – it’s their life. And they truly care about supporting cadets all across the state... I had a thought: maybe one day, this could be my life too. Maybe I’ll work in fire and emergency services and get the chance to serve my community – just like they do.”

– Cadet, aged 14



The Youth in Emergency Services program

The Youth in Emergency Services (YES) program, developed by DFES, is a community driven initiative aimed at empowering young people aged 11-18 with the tools, knowledge and confidence to become emergency service leaders. By blending practical learning with strategic industry partnerships and collaborations, the program prepares them for real-world challenges and helps build the necessary networks for community resilience.

This includes:

- Practical emergency training
- Mentorship from experienced volunteers
- Participation in realistic scenarios
- Clear pathways into adult volunteering and emergency services careers

This mentorship not only transfers valuable knowledge but also fosters a strong sense of community, ensuring that the next generation of volunteers is well-equipped to serve.

The YES Challenge

Where young people connect with industry

Launched in 2022 in partnership with the Mining Emergency Response Competition (MERC), the YES Challenge bridges the gap between theoretical knowledge and real-life skills. Young people get the chance to put training into action in scenarios that simulate actual emergencies, which helps them build confidence and competence.

The connections made during the YES Challenge offer young people invaluable exposure to emergency services professionals, industry experts, and government agencies.

Once they feel connected to this broader community of experts, they are more likely to stay engaged and committed to volunteering long-term. These relationships open doors to mentorships, volunteer opportunities, and support their growth into future leaders in the emergency services sector.

They’re not just learning skills. They’re joining a supportive network of professionals who share their commitment to community safety and resilience.



**WATCH A VIDEO OF THE
CADETS IN ACTION**



**Empowering young
people today to build
a safer tomorrow**

The YES Program is the foundation for sustainable emergency services. By investing in youth today, we are building stronger, safer, and more resilient communities for the future.

For more information,
contact:

Lynelle Fozard
Coordinator Youth in Emergency Services, Strategic Volunteer and
Youth Programs, Department of Fire and Emergency Services

P: 0429 377 703
E: volunteer.youth@dfes.wa.gov.au



For more information about the
YES program, visit our website by
scanning the QR code.

dfes.wa.gov.au



DISASTER & ECONOMIC RESILIENCE APPROACH

Ensuring local businesses, community groups, organisations and government agencies exposed to climate and disaster risks and hazards can be better prepared



Strategy

Our journey

1 MEETING COMMUNITIES WHERE THEY ARE

Providing support to existing community resilience priorities, and creating an enabling environment to progress towards strategies 2 and 3

2 FACILITATING PLACE BASED RESILIENCE NETWORKS

Collective conversations and actions to drive shared resilience visioning and goal-setting and action

3 SUPPORTING COMMUNITY PREPAREDNESS

Mobilising support for integrated disaster preparedness and resilience plans, guided by emergency services, government and community leaders

Capabilities

What we bring

BEST PRACTICE BUSINESS VOLUNTEERING

Co-designing volunteer engagements with community and corporate partners, with measurable resilience outcomes

PLACE BASED PLANNING AND COMMUNITY ENGAGEMENT

Facilitating locally-led decision-making through collaborative processes that identify local resilience priorities

REFLECTION AND LEARNING

Capturing and communicating lessons for improved practice

PRAGMATIC SKILLS SUPPORT

Programs and approaches for local businesses that enhance their resilience through targeted support in agreed priority areas

ADVOCACY

Elevating community resilience priorities to improve system conditions

PARTNERSHIP BUILDING AND BROKERING

Creating connections, building partnerships and brokering networks and partnerships around locally-led resilience

Principles

What guides us



CONNECTING LOCAL TO GLOBAL



TRAUMA INFORMED



SUSTAINABLE SOLUTIONS



LEVERAGING LOCAL KNOWLEDGE



INCLUSIVE & EQUITABLE LOCAL LEADERSHIP



CENTRALISING THE ROLE OF BUSINESS



STRENGTHS BASED



www.abv.org.au

“ABV creates connections in the community.”

Nick Kemp B&VBC

Disaster Recovery Mental Health – Using Images from Yesterday to Make the Future Now...Stitches in Time

Stephanie Outridge Field, Christine Kumnick, MSAMHS Disaster Flood Team
Supporters: Iris Vukelic, Kieran Kinsella, Dr Geoffrey Lau, Yeronga Community Plus,
Annerley-Stephens History Group, John Oxley Library
MSAMHS Disaster Recovery Team, Metro South Health, Queensland Government

Assistance provided through the jointly funded Australian Government and Queensland Government
Disaster Recovery Funding Arrangements (DRFA)

Rationale

Impact of natural disaster on both individuals and communities can be devastating. Mental health teams have been employed to support the psychological and emotional needs of those affected by natural disasters. Historically approaches have focused on traditional therapies to lead to recovery and reconnection. Creative therapies have more recently been utilised to provide those impacted with alternative methods of expressing their experience and processing their grief, loss and anger. The aim of the creative therapy intervention, *Stitches in Time*, was to encourage reflection about the local area over time and change rather than focusing on more recent negative memories during and post flood event. The aim was to help process these traumatic recollections and reconnect with their locality and community places.



What happened along the way:

- Being open to the process
- Co-creating
- Sharing stories
- Learning new skills
- Learning about the history of our suburb
- Exploring ideas of change and place
- Flood recovery / therapy
- Building resilience
- Mindfulness
- Connection
- Belonging
- Acceptance
- Listened to
- Respected



Embellishing with flowers to hope for a more beautiful future? Not everyone connects through talk. The sense of place and people was strengthened.



Wanganui Gardens Estate at Yeronga, Brisbane, ca. 1900

Family of four at the Yeronga unemployment camp

The project involved using black and white images from the early 1900s. Participants selected an image they connected with to embroider using colour.



I reflected on the differences of life now and then. It got me thinking how difficult it would be in the camp with 3 children. I like that the photo shows a family together and found the bow in the little girl's hair irresistible and a representation of care, fun, pride and joy. I began this project with feelings of uncertainty. But then I planned what I wanted to do. It was frustrating learning the stitch and took some time and practise. It all became easier with time.



The brown river - dealing with flood? Initially dark, man trying to control nature. It's not the be all and end all of purpose. Things can be repaired, (it's) not the end of the world... can be restored (and) worth something.



The positives of doing a joint project, discussing local history and to talk about their own stories compared to those in the postcards, highlighted similarities and the huge contrasts.



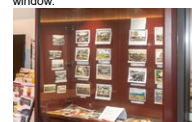
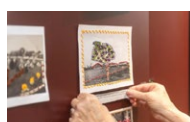
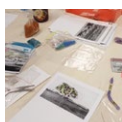
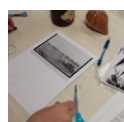
Lots of flowers and lots of clouds – the realities of life? There were deep discussions that are personal and historical.



I am from a small village so the tent camp reminds me of that – a collective and connected community. The way participants interpreted the images and chose where to embellish with thread. Was the fencing highlighted for safety?



I love connection and coincidence and felt this project was about both.





Building resilience in Perth's coastal communities

Perth NRM is a for-purpose organisation operating in the natural resource management (NRM) sector, delivering solutions to Perth's environmental issues.

Perth NRM's longest running flagship program, **Coastal + Marine**, has operated for over 20 years across 173 kms of coastline, delivering evidence-based, community-driven programs to grow the resilience and health of Perth's coastal and marine environments.

In partnership with local governments, state agencies, tertiary institutes, schools, community groups and industry stakeholders, the team implements long-term strategic projects that address impacts to our coastline, including coastal erosion, biodiversity loss and climate change.

The Coastal + Marine Program delivers over 200 events and activities annually, to establish thousands of native plants across priority dune systems, support a measurable reduction in marine debris, grow awareness of coastal processes through education and increase stakeholder collaboration on regional coastal resilience.



The Disaster Ready Fund Project



Developed and led by the Coastal + Marine Program, *Building coastal resilience in Perth's communities*, is funded by the Australian Government's Disaster Ready Fund (Round 2) and supported in WA by the Department of Fire and Emergency Services.

This three-year project, commencing March 2025, works in conjunction with five local councils, **Fremantle, Cambridge, Stirling, Joondalup and Wanneroo**, and their respective coastal community groups, addressing coastal hazards and raising awareness of coastal processes.

Installation of nature-based solutions (NbS), citizen science programs and educational opportunities will occur, building resilience of the coastline and it's communities and better preparing people to deal with coastal hazards and disasters.



Australian Government
National Emergency Management Agency



DFES
Department of Fire & Emergency Services

Project Areas



01

Nature Based Restoration

Mitigating coastal hazards, such as erosion, by installing NbS and forming resilient dune buffers at five sites across Perth northern coastline – Port Beach, Floreat Beach, Mettams Pool, Pinnaroo Point and Quinns Beach. NbS include, but not limited to:

- Planting
- Jute matting
- Sand-trap fencing
- Brushing



02

Coastal Monitoring & Citizen Science

CoastSnap (CS) is beach monitoring program that turns anyone's phone into a powerful coastal monitoring device. Developed by the UNSW Water Research Laboratory, this citizen science program allows community to take a photo at a CS station and upload it to the website. Shoreline mapping data can then be extracted from the images. Five CS stations will be set up across Perth's northern coastline.

How it works: www.coastsnap.com

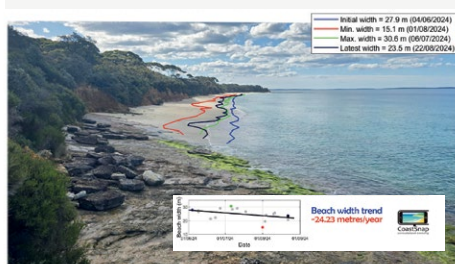


03

Education & Aboriginal Engagement

Education is essential for building resilience across coastal communities. This project will develop events that builds capacity of its participants while educating them on coastal processes.

Perth NRM's Adopt A Beach Schools Program will invite a new generation of coastal stewards to undertake restoration activities at the beach. Aboriginal cultural information and experiences, through consultation with Traditional Owners and educators, will be included within the activities.



Contact

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Coastal + Marine Program Manager
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Tell us about your local beach!



<https://forms.office.com/r/PHKsBcdFri>

Are we doing our best for childbearing women in Australian disaster management?

Elena Skoko, Dr Jo Durham, Dr Deb Duthie, Dr Yvette Miller

Faculty of Health, Queensland University of Technology (QUT)

Maternity care in disasters. The Queensland Case Study

Childbearing women and newborns are a vulnerable population affected by disasters in specific ways that may be overlooked. We want to understand how maternity care functions during disasters in Queensland, its key aspects, and improvement suggestions from multiple stakeholders.

Background

Disasters negatively affect maternal and newborn health. Perinatal maternal stress from disaster exposure is the major cause of adverse health outcomes for mothers and babies. Stress is further exacerbated by the health system response which restricts services to hospital-based medical care for childbirth, while reducing other essential (antenatal and postnatal) maternity services. Continuity of care can help childbearing women prepare for and recover after disasters, including linking women to other areas of support.

Substandard disaster responses and violations of human rights of the childbearing population became more conspicuous during COVID pandemic, both worldwide (Lalor et al., 2023) and in Australia (Sweet et al., 2022), questioning the appropriateness of current maternity care in disasters in all contexts (Chowdhury et al., 2022).

Disaster planning should be designed with and prioritise the voices of women, maternity care representatives and primary health care practitioners to meet the needs and expectations of childbearing women.

This research is approved by QUT UHREC (n. 8399). The PhD is supported by scholarships from QUT and NHRA.

The Queensland Case Study

Available studies of the health impact of disasters on childbearing women and newborns in Queensland have detected significant rises in preterm and low birth-weight infants associated with exposure to natural hazards (Parayiwa et al., 2023, Wang et al., 2013). In Australia, pregnant and postpartum women face: (Gribble, 2024)

- disrupted healthcare access,
- mobility limitations,
- inadequate nutrition,
- elevated mental health impacts, and
- heightened vulnerability to domestic and sexual violence

Infants' vulnerabilities and caregiving demands further strain mothers who prioritise their children's safety over their own, with compounded disadvantages for women with other vulnerabilities (e.g., in rural and remote areas; Hamrosi & Gribble, 2025). Urban, rural, and remote, migrant and Indigenous population are differently impacted.

The Queensland Case Study aims to understand **how disaster management in Queensland**, a well-resourced state that regularly manages natural hazards and disasters, **addresses the needs and expectations of childbearing women as a vulnerable population.**

Participate in the study

Were you pregnant, gave birth or had an infant during a disaster? Did you assist a childbearing woman in a disaster as a health practitioner, first responder or a decision maker? We would like to hear your story and your views in an interview.

We are seeking broad perspectives from:

- mothers, family and community members
- health practitioners (paramedics, midwives, nurses, obstetricians, medical officers, GPs)
- first responders (firefighters, police officers, military officers, volunteers)
- governmental and disaster management decision makers, and
- urban, rural, and remote communities of all belongings.



Further information

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Building Better Disaster Resilience One Kitchen Table at a Time

Dr Elise Remling,¹ Dr Katie Moon,² Dr Sophie Yates³

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² School of Business, Public Service Research Group, UNSW Canberra, ACT

³ Crawford School of Public Policy, College of Asia and the Pacific, Australian National University, ACT

Empowering Social Networks: Reimagining Community-led Disaster Preparedness through Kitchen Table Conversations

Climate-driven extreme events are increasing in frequency and intensity, demanding new approaches to community preparedness. The 2019-2020 Black Summer fires demonstrated that traditional approaches are insufficient when government agencies are stretched beyond capacity, creating 'response gaps' that communities must fill.

The Kitchen Table Approach

Disaster social science shows that effective risk communication and preparedness requires interactive processes and dialogue rather than just agency outreach efforts, which is how much current disaster preparedness is organised. Drawing on kitchen table methodology - a participatory, community-centred approach - we developed and tested a suite of resources enabling lay people to hold disaster preparedness conversations within their trusted social networks. These resources include conversation starters, checklists and stress testing scenarios. Our methodology involved collaborative design and pilot testing through two focus groups in the Eurobodalla Shire, NSW. Kitchen table conversations are informal yet focused discussions that anyone can host with their neighbours, friends, or family. They do not require formal organisation, committees, or assigned roles - making them relatively accessible for people to start and maintain.

How It Challenges Traditional Approaches

The developed kitchen table conversation toolkit challenges traditional preparedness paradigms in three ways:

First, it acknowledges communities as both first and last responders and recognises that peer networks are particularly effective in creating incentives to prepare. This addresses the myth that disaster response is either primarily the domain of official agencies or atomised households. Second, it provides adaptable rather than prescriptive resources, acknowledging that people have different needs, capacities and appetite for preparation. Third, it emphasises preparedness as an iterative, relational process rather than a one-off activity or top-down information transfer.

Initial Findings

Kitchen table conversations can strengthen social capital, improve disaster literacy, create opportunities for resource sharing and collaboration, and enhance collective preparedness. Participant feedback indicates these conversations support psychological



Photo: E. Remling

preparedness by creating safe spaces to address shared anxieties and support in household preparedness.

Significance

This approach addresses a crucial gap in Australia's disaster resilience puzzle where social capital and community networks at the meso-level mobilise the most effective immediate responses. Unlike traditional approaches that often rely on external funding and expertise, this kitchen table conversation toolkit enables communities to independently maintain their preparedness practices in the long term, complementing formal approaches while closing implementation gaps where resources are limited. We need deeper conversations about emergency preparedness to ensure communities are climate-ready for an uncertain future.



Photo: E. Remling

Further information

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AUSTRALIAN DISASTER RESILIENCE KNOWLEDGE HUB

Disability inclusion and disasters

In Australia there are approximately 4.4 million people living with disability.

The AIDR disability inclusion and disasters collection brings together research, guidance, resources and tools to support disability-inclusive disaster risk reduction (DIDRR) in policy and practice.

View the
collection online



knowledge.aidr.org.au/collections/disability-inclusion-and-disasters



Legal and policy frameworks



Planning for disability-inclusive disaster risk reduction



Emergency management DIDRR



Leave Nobody Behind webinar series



Collaborating4Inclusion



Disability inclusion and disasters in AJEM

[KNOWLEDGE.AIDR.ORG.AU/COLLECTIONS/DISABILITY-INCLUSION-AND-DISASTERS](https://knowledge.aidr.org.au/collections/disability-inclusion-and-disasters)

Reimagining the Organising of Disaster Recovery: Balancing Time, Planning and Support

Louise Mitchell,¹ Dr Jodie Bailie,^{2,3} Professor Emerita Gwynnyth Llewellyn,² Associate Prof Michelle Villeneuve²

¹ PhD Candidate, Faculty of Medicine and Health, University of Sydney, NSW ^{2,3} Centre for Disability Research and Policy, Faculty of Medicine and Health, University of Sydney, NSW.

When disaster strikes, the way we organise recovery efforts can significantly impact community healing. Following the extensive 2019/2020 fires in NSW, mentoring and resource support for recovery coordination were stretched thin, pushing local councils to innovate without the usual supports. This situation sparked a re-evaluation of how recovery governance could be restructured to better serve affected communities.

The research need

After a disaster, numerous agencies rush to help at the local level. These groups often form governance committees as outlined by pre-disaster plans, or they may come together organically to meet urgent needs. However, there's a critical gap in understanding how to effectively organise these local groups to enhance collaboration across agencies and truly meet the needs of the community.

What we did

In response to the devastating 2019-2020 bushfires, one of the worst on record, we studied recovery efforts over two years in a severely impacted area in NSW. Our research focused on workers involved in health, social, and community recovery, who were part of both **formal committees** and **spontaneously formed networks** that emerged after the fires for the recovery. We gathered insights through detailed interviews, using appreciative inquiry and Socio-Cultural Activity Theory (SCAT) to analyse how these groups collaborated.

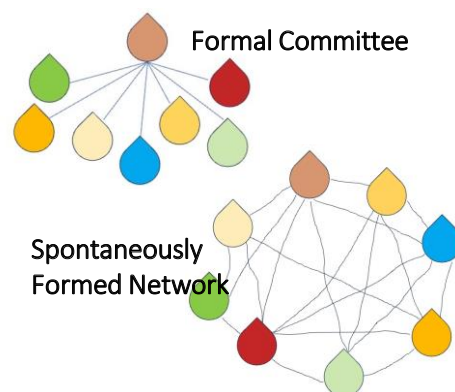
What we found

Our findings revealed that both structured committees and flexible networks played crucial roles but in different ways. They addressed ongoing and emerging tensions and found ways to work through systemic challenges.

Time: Despite the urgency of community needs, the Committee took important initial steps, together taking time to map out available support services comprehensively. The network invested time to build on this and develop an agreement about how they would work together.

Planning: The network navigated internal committee tensions by fostering deep, meaningful conversations about the work that enhanced joint ownership and adaptability—key during the unpredictable challenges posed by the pandemic. This approach led to the effective implementation of multiple support initiatives, ensuring that no community member was turned away.

Support: Network participants gained a deeper understanding of each other's roles, enhancing on-the-job learning and mutual support. This environment encouraged innovative solutions to complex issues.



Additional Insights

The network successfully broke down barriers between different recovery roles—such as recovery case management, disaster mental health services, and community development—allowing for the exchange of information and integrated service delivery.

Looking ahead

To better address the confusion and challenges faced by disaster-affected individuals, it is clear that the organising of recovery efforts need more than just formal committees.

Our study highlights the importance of including flexible and supported adaptive governance frameworks that legitimise emergent agency networks alongside traditional structures, ensuring a more effective response to community needs after major disasters.



Further information

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Transforming how we build expertise together:

Building a cross-border Disaster Recovery network for the future

ACIM Solutions
Australian Centre for Investigation, Incident & Management Solutions

Australasian Women in Emergencies Network

Kiara Noonan
Macedon Ranges Shire Council, Vic.
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Kelly Boladeras
Northern Grampians Shire Council, Vic.

Nat Sonenko
Queensland Fire Service

Breanna Pollock
Central Coast Council, NSW

Jana Wurriehausen
SA Country Fire Service

Robyn Short
NSW Coroners Court

Aimee Tyson
Orange Sky, Qld

Susan Henry
ACIM Solutions

Sally McKay
ACIM Solutions

In June of 2024, 7 women working in the Emergency Management and Recovery Sector across 4 states were selected for the prestigious Philippa Woolf Scholarship from the Australasian Women in Emergencies Network.

The group came together weekly to learn, share, and be guided by Susan Henry and Sally McKay of ACIM Solutions, and completed 3 units of the Diploma of Public Safety (Recovery Management). The course covered working in a recovery context, providing relief and recovery services to disaster-affected communities and providing psychological first aid.

As a group, we have come together to share our experiences working in a tight-knit group throughout the course and what we have taken away to our organisations.

As a young woman in Emergency Management, I often doubted myself. This course helped me recognise and build on the knowledge I already had, giving me the confidence to step into a new role after receiving this scholarship.

In recovery, we often talk about building resilience — this course, alongside AWE and its values, has helped seven of us develop the skills to strengthen our own resilience while managing complex emergencies in our work and volunteer roles.

The experience has reinforced the power of women supporting one another — no matter our background, location, or stage of life.



Kiara Noonan
Emergency Management Officer
Macedon Ranges Shire Council

Through the Philippa Woolf Scholarship, I've had the privilege of learning alongside a diverse group of women at different stages of their careers in emergency management. Despite our varied backgrounds, collaboration and cooperation stood out as unifying strengths—helping us learn, lead, and support one another.

These same qualities are vital in emergency management, where inclusive decision-making, strong community ties, and clear, empathetic communication are essential for effective response and recovery.

Women bring unique strengths to this field, as Gloria Steinem said, "When unique voices are united in a common cause, they make history." This reflects the true impact of women's collaborative leadership in emergency management.



Robyn Short
Senior Project Officer
Bondi Junction Inquest, NSW State Coroners Court

Australasian Women in Emergencies Network

Promote and develop the skills and strengths of women in emergency management and disaster resilience.

Give a voice to women in emergency management and disaster resilience.

Encourage and support women in emergency management and disaster resilience.

Provide a platform for networking and shared information.

Promote collaboration and cooperation.

Encourage gender equity in emergency management and disaster resilience.

Since completing the Recovery Skillset Scholarship through ACIM Solutions and the AWE Network, I've gained new confidence as a mature-aged woman in a male-dominated field.

I was able to apply these skills during the Severe Weather Event in Far North Queensland in early 2025, working under pressure and trusting my decisions. I now feel more empowered to speak up and share my views with confidence.

This experience also gave me a deep appreciation for the incredible strengths of women in emergency management. Learning alongside such talented, diverse women — many of whom I now call friends — showed me the power of shared knowledge and support.

Natalie Sonenko
Business Support Officer & Logistics Officer
Queensland Fire Department



At the start of my emergency management career, I had few female role models. This AWE scholarship gave me the chance to learn alongside an incredible group of women with diverse backgrounds.

The experience has boosted my confidence in recovery work, helping me contribute more effectively and support many other women in taking on emergency roles.

Since completing the course, I've co-led an emergency management team with two amazing women, strengthening our council's ability to support communities during emergencies and lead preparedness initiatives.

Kelly Boladeras
Emergency Management Officer
Northern Grampians Shire Council



Connections are vital in any profession, but especially in the fast-paced and challenging field of emergency management. Strong relationships help us work better together, share ideas, and build resilience.

Through the Recovery Skillset training by ACIM Solutions and the AWE Network, I've not only learned valuable skills but also expanded my professional network. Most importantly, I've gained a deeper appreciation for the strength and talent of women in this sector.

This experience reminded me how important it is to value diverse skills and perspectives in a team. As the saying goes, "If you want to go fast, go alone. If you want to go far, go together." I'm grateful for those who are willing to go together.

Jana Wurriehausen
Wellbeing Officer
South Australian Country Fire Service



Coming from a background in Community Development — a field often led by women — transitioning into the more male-dominated world of Emergency Management was a big shift. Moving from a space where I felt confident, to one driven by hierarchy and legislation made me question if my approach was truly valued.

To adapt, I connected with other women in the sector, learning from their experience and building a strong support network.



Breanna Pollock
Community Development Worker
Central Coast Council

"As I continue in this field, I aim to use my skills to grow professionally and support a culture of collaboration and inclusion. I'm confident this approach will lead to greater impact and stronger, more resilient communities." NS

"I'm working with communities that have evacuated twice in 10 months due to bushfires. The Psychological First Aid and community-led recovery parts of this course have been incredibly helpful in supporting them through relief and recovery." KB

"It's been an incredible journey, learning and growing with such a diverse group of women. Even without meeting in person, the connections we've built have been invaluable. I now have a trusted group to debrief with, share ideas, and lean on." KN

"This opportunity to learn alongside women with diverse skills and backgrounds has helped rebuild my confidence, highlight the value I bring, and create a space where my voice — and the voices of others — can be heard and supported." BP



Through shared learning and practical application, the scholarship empowered us to contribute confidently and effectively to recovery efforts, while advancing gender equity and representation across the field.

Our learning experience and outcomes working with ACIM Solutions strongly aligned with the values of the Australasian Women in Emergencies Network in building a strong cross-border recovery network which we have all been able to lean upon to support our day-to-day work.

Disaster Recovery and Beyond

Dr Saadia Majeed

Disaster Risk Reduction & Climate Change Policy Advisor

AFAC 2025 | August 26–29, 2025



Disaster recovery is a multifaceted process that involves rebuilding and restoring communities and infrastructure following a catastrophic event. Over time, the concept of disaster recovery has been marked by shifting interpretations and temporal dynamics. Despite ongoing research, the duration of the recovery process remains largely unanswered. This review examines the intricacies of recovery studies, with a particular emphasis on the evolution of the concept of ‘recovery’ and the understanding of the duration of the recovery process. The analysis covers a range of aspects, beginning with an in-depth examination of the various meanings and interpretations associated with the concept of recovery. Following a timeline-based approach, this chapter traces the temporal dynamics that shape post-disaster recovery and investigates the duration of various recovery phases. The review concludes by summarising key findings and providing insightful perspectives on the conceptual evolution and temporal complexities inherent in the disaster recovery process.

Recovery: A Concept in Constant Evolution

The meaning of “recovery” continues to evolve and varies significantly across disciplines, organisations, and communities. While operational definitions often focus on the restoration of infrastructure and economic stability, survivor-centred perspectives place greater emphasis on restoring a sense of normalcy, safety, and dignity.

A timeline-based exploration of key milestones — from medieval architectural resilience to modern disaster management frameworks — illustrates how historical lessons continue to shape contemporary recovery strategies. This review also considers the duration of recovery, noting that recovery timelines are heavily influenced by sector-specific factors such as governance, economic stability, psychosocial support, and environmental sustainability. Also, the critical role of community participation, cross-sector collaboration, and culturally responsive approaches in developing effective recovery strategies.

By analysing both historical and current models, the paper identifies emerging trends and advocates for comprehensive frameworks that encompass physical, social, cultural, and economic dimensions. The ongoing evolution of recovery studies reflects a growing awareness of the complexity involved, calling for interdisciplinary approaches and the incorporation of Nature-based Solutions (NbS) to strengthen resilience. Figure 1 presents a summary timeline of the key stages and shifts in recovery research explored in this review.

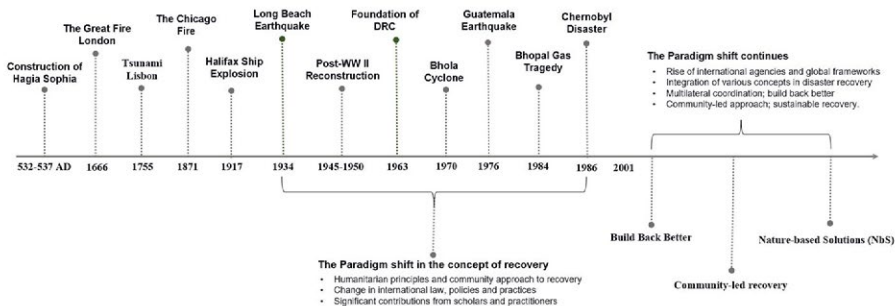


Figure 1: Events shaping the evolution of recovery studies in the disaster literature

Duration of Recovery: Where to Begin and When to End?

In an effort to explain the recovery process, Kates and Pijawka (1977) developed a post-disaster recovery model that outlines how communities recover following a disaster. Their model (Figure 2) categorises recovery into four distinct stages: emergency response; restoration of the restorable; reconstruction (I), which involves replacing what was destroyed for functional purposes; and reconstruction (II), which focuses on commemoration, improvement, and long-term development. These phases can unfold over a timeline ranging from a few days to more than ten years.

Traditionally, the primary focus in disaster recovery literature has been on restoring the economic and physical environment, often at the expense of acknowledging the preferences and lived experiences of disaster-affected populations (Sobhaninia & Buckman, 2021). Despite growing interest in refining recovery models, the exact duration of recovery processes remains largely unresolved. International recovery frameworks tend to classify the continuum into three broad phases: short-term or immediate recovery, mid-term or early recovery, and long-term recovery. Short-term recovery concentrates on emergency relief and stabilisation efforts (Figure 3). The early recovery phase, generally occurring within the first 1 to 12 months after a disaster, focuses on damage assessment and the planning of recovery activities. Long-term recovery may take years or even decades to complete and centres on rebuilding efforts that incorporate the principles of building back better to promote sustainable development and disaster resilience (Zhou, 2022).

Wilkinson et al. (2014) propose an alternative model that takes a more psychosocial perspective, describing recovery through five stages: chaos, realisation, mobilisation, struggle, and the new normal. According to this model, true recovery begins only after the immediate response phase is over—when the injured and deceased have been attended to, buildings have been secured, and the basic needs of shelter and food have been met. From this point forward, the community begins the arduous process of adapting to a changed reality, marking the transition from initial survival to long-term rebuilding and renewal.

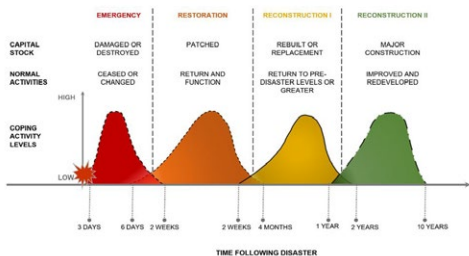


Figure 2: Model illustrating recovery activities and the temporal phases of a disaster (adapted and modified after Kates and Pijawka, 1977)

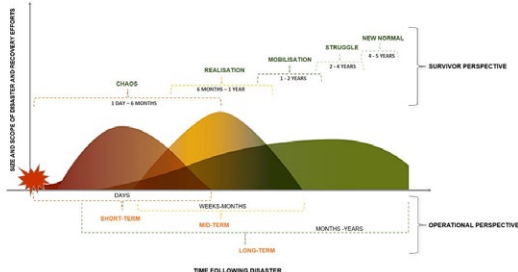


Figure 3: Duration of the recovery process (adapted and modified from FEMA, 2011; Wilkinson et al., 2014; ADRF, 2022)

Key Points

- Recovery is dynamic and context-specific** – It evolves over time and varies across settings.
- Multiple factors shape recovery** – Including economic, cultural, environmental, psychological, and policy-related influences.
- Clarity in terminology is essential** – Practitioners must define what ‘recovery’ means in their specific context.
- Recovery is not just rebuilding** – It extends beyond restoring infrastructure to include social and community wellbeing.
- A holistic approach is needed** – Effective recovery addresses structural, non-structural, cultural, and environmental dimensions.
- Resilience is the goal** – Sustainable recovery strengthens systems and communities, not just physical assets.

The impact on and changing nature of social capital through multiple disasters

Alexandra Tanfield, PhD Student
Faculty of Health, University of Canberra

Supervisors: Prof Jacki Schirmer, University of Canberra and Prof Lisa Gibbs, University of Melbourne

Multiple disasters pose significant challenges to Australian communities, affecting recovery, vulnerability to future disasters and community health. Social capital is integral to disaster resilience, yet our understanding of how it is impacted is under-researched in the context of multiple disasters. Existing social capital within communities is the foundation on where to support and develop strategies to strengthen it, and so a better understanding of how it is being affected is crucial.



Background

Australia is experiencing an increasing prevalence in multiple disasters, yet our understanding of how multiple disasters are impacting communities is in its infancy. Social capital is central to living with, adapting and building resilience to disasters, yet only limited research focuses on how social capital is being impacted by both single and multiple disasters.

Research Aims

The knowledge generated aims to add to the evidence base identifying how to better support communities maintain and strengthen social capital before, during and after multiple disasters.

Research Questions

The research explores in what ways the nature and operation of social capital is changing through multiple disasters, what impacts these changes are having on individuals and community and how these changes are affecting individual and community ability to build resilience to future disasters.

Methodology

The research follows a sequential exploratory design through a mixed methods approach. Firstly, interviews have been conducted in a case study community. Informed by the findings of the interviews, questions will then be designed for the University of Canberra Regional Wellbeing Survey, in order to test generalisability of these findings.

Findings

The research is currently in the analysis phase of the interviews and research papers are being written on findings relating to:

- The strengthening of bridging social capital in a rural community who have experienced multiple disasters and the barriers to this translating into increased agency.
- The erosion of linking social capital and the changing thoughts and behaviours in a rural community who have experienced multiple disasters.
- Changes in social capital depending on the type, extent and severity of disaster.



Note. Tinnie Heroes Still (2023), by S. Freymark and J. Malecki.
Retrieved from <https://www.youtube.com/watch?v=EbCDqhVIEBk>



Further information

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The 'Butterfly Effect': Transformative Education For Disaster Resilience

Belinda Davis,¹ Prof Alan Reid,¹ Prof Briony Rogers,² Prof Ilan Kelman³

¹ Faculty of Education, Monash University

² MSDI & Fire to Flourish, Monash University

³ Department of Risk and Disaster Reduction, University College London

LinkedIn



How can Education play a Transformative Role in increasing Societal Resilience?

International policy frameworks, such as the Sendai Framework for Disaster Risk Reduction, have positioned children as agents of change with the potential to (a) create transformative action in their communities, and (b) protect themselves and others from the impacts of natural hazards and disasters. This research has developed a conceptual toolkit to move us to transformative policy and practice to support these objectives.

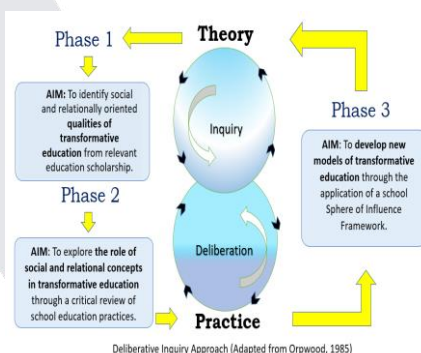
Research Questions



What's the Problem Represented to Be?

Scholarship on sustainability education draws upon various paradigms and concepts to highlight transformative education, **however these have not been translated into a disaster resilience context**. Most education for disaster resilience follows a Knowledge-Attitude-Behaviour (KAB) model of education; these models of education are based on the incorrect assumption that knowledge and attitudes will result in new behaviours.

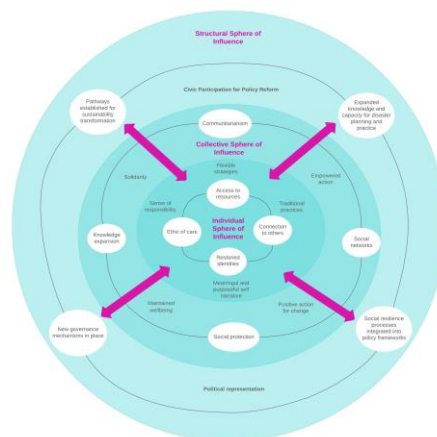
A Deliberative Inquiry Approach



Deliberative Inquiry Approach (Adapted from Orpwood, 1985)

Conceptual Framework

The research aimed to identify what is transformative through educational theories and concepts that align with an educational purpose of socialization and subjectification, rather than pure qualification. The research applies individual, collective and structural spheres of influence that expand through relationality to transform societal resilience; a process likened to the "butterfly effect":



An Ethical & Relational Framing

Applying ethical orientations of the self in relation to other has created a novel way to generate new relational understandings for what constitutes as meaningful and transformative education outcomes in a disaster context.

Findings

Analysis of 45 international school education cases showed that **education for disaster resilience generally represents a shallow—as opposed to a deep or transformative—style of education when educators focus too heavily on safety behaviours**.

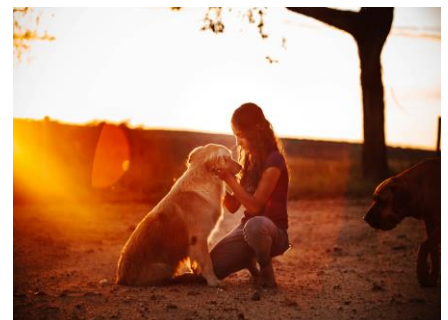


Photo: Helena Lopes on Unsplash

Shallow education comes at the expense of a meaningful educational experience that can inspire learners to be: reflexive, tune in with the wider social context and take mental ownership. **Transformative outcomes were best achieved when the education style offered extrinsic relational value and was externally oriented towards others**. A bushfire education program in South Australia that incorporated a storyline of a dog called Bella was identified as a best practice example.

Next Steps: Policy and Practice

Novel disaster resilience education models are being developed that embed relational components into design and practice.



Further information

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Scan the QR codes for publications in *Global Sustainability* and the *International Journal of Disaster Risk Science*: Special Issue on the Sendai Framework for Disaster Risk Reduction

Inviting the hearing sector into the emergency preparedness space

Brigit Maguire,¹ Michelle Villeneuve¹ and Isabelle Boisvert¹

¹ Impact Centre for Disability Research and Policy, University of Sydney

Strengthening the experiences of deaf or hard of hearing (DHH+) people during extreme weather events and other emergencies

In this project we seek to (1) understand the current experiences of DHH+ people during emergencies; and (2) co-design an emergency preparedness tool for people who use hearing devices.

Phase 1: Understanding current experiences

Scoping review

Our scoping review identified three factors that influence DHH+ people's access to and participation in communication: (1) emergency warnings, alerts and announcements, (2) the emergency sector response, and (3) emergency preparedness.

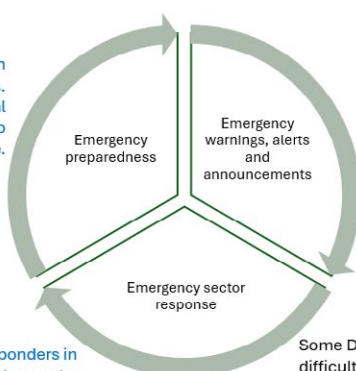
There are opportunities to leverage capabilities and facilitators to address common barriers and support increased accessibility and inclusion for DHH+ people before, during and after emergencies (see figure).

There are roles for DHH+ community organisations and the hearing care sector to link DHH+ individuals with information, education and training provided by the emergency sector. For many DHH+ people who do not have connections with support organisations or other DHH+ people, the hearing care sector may be the only linkage point between their deafness or hearing difficulties, their hearing devices, and their personal emergency awareness and preparedness.

Include the diverse needs of DHH people in emergency plans at all levels.
Ensure that training and educational materials are accessible and relevant to DHH people.

Inaccessible and irrelevant emergency preparedness materials and training activities → Many DHH+ people have low levels of emergency knowledge and preparedness.

Provide training for first responders in communicating with DHH+ people.
Plan for access in evacuation shelters and in the healthcare system.



Audio-based → Many DHH+ people unable to access safety information and information about evacuation options, services, public health advice.

Ensure that warnings and alerts are provided in multiple formats (including visually) and through multiple channels.

Some DHH+ people experience communication difficulties with first responders and within evacuation shelters and healthcare systems.

Cross-sectional survey

Our survey of 124 DHH+ Australians found a high level of reliance on hearing devices among many DHH+ people who use them. Without their hearing devices, many DHH+ people may be limited in the information they can access; who they can communicate with; and in making verbal emergency phone calls, leading to barriers in communicating with emergency response personnel or other unfamiliar people.

When a DHH+ hearing device user only has access to rechargeable batteries, they are likely to experience greater impacts from power outages and consequent impacts on communication and access to information.

When smartphones are lost, damaged or cannot be charged during an emergency, individuals may not be able to optimise the settings of their hearing device, including for connectivity (e.g. to access public announcements or to connect to other devices through Bluetooth).

Phase 2 (2025)

This phase will concentrate on critically evaluating current preparedness tools (including those for other conditions). It will also involve qualitative research and collaborative design efforts with DHH+ individuals, hearing care professionals, and manufacturers to create a new preparedness tool tailored for hearing device users.

Figure 1: Scoping study results: Barriers experienced & recommendations to facilitate access to communication and information



Further information

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