



Natural Hazards Research Australia

North Australia Fire Managers
4-6 June 2024
Townsville

David Bruce & Nicola Moore
Natural Hazards Research Australia

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Acknowledgement of Country

Manawaradhanjin – ‘in our hands’
(mana wara tha nyin)

Leanne Brook, 2022
@murramarang_art

**REFLECT
RECONCILIATION
ACTION PLAN**



Our vision

That communities will be safer, more resilient and sustainable in the face of natural disasters

Our mission

To work with partners and the community on research that is useful, actionable and supportive of better decision-making to save lives and protect communities.



Participants

FEDERAL



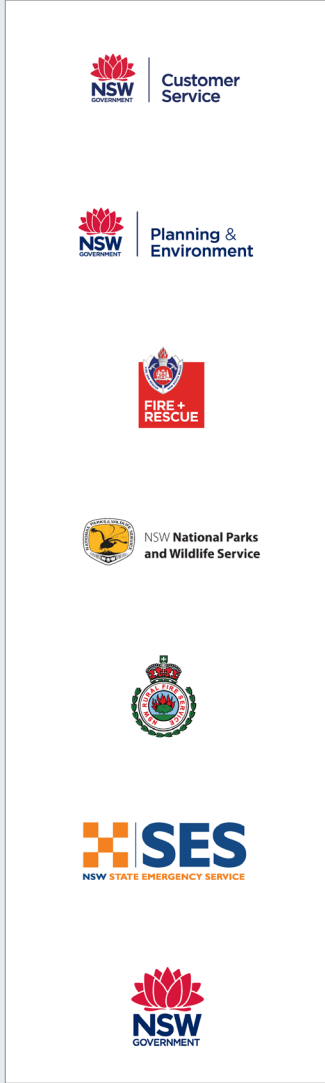
NATIONAL PARTNERS



AUSTRALIAN CAPITAL TERRITORY



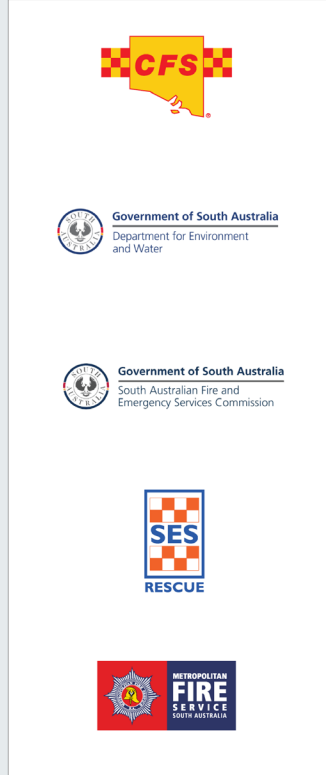
NEW SOUTH WALES



QUEENSLAND



SOUTH AUSTRALIA



VICTORIA



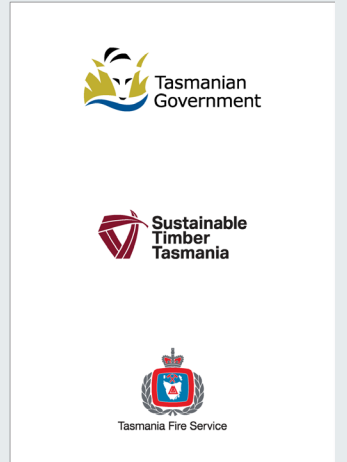
NORTHERN TERRITORY



WESTERN AUSTRALIA



TASMANIA



Research institutions

A I T H E R

alluvium



CURIO | GROUP



Research and Implementation

Progress

- 57 active research projects
- 61 postgraduate scholar and associate students
- Data management framework and catalogue to share hazards data being established
- Research informed findings presented at conferences, workshops, seminars and more

More in 2024

- More rounds of research investment
- Commencement of work placement progress
- Thought leadership
- First Nations Scholarship
- Measuring performance

Cultural land management resources

Principles and protocols for cultural land management governance and research

Natural hazards management agencies and research institutions all have legal and ethical obligations to engage with Indigenous peoples no matter where they work in Australia. **Everywhere is Country** and **Indigenous peoples speak for Country**. Nonetheless, starting or maintaining intercultural collaborations can present many obstacles, and there is a need for guidance on how to best work together for the benefit of Country. The following summarises a review of relevant collaborative principles, processes and protocols for agencies and research institutions. It is only a **starting point** for local and in-depth conversations.

PRINCIPLE	EXAMPLE PROCESS	EXAMPLE PROTOCOL
1. SELF-DETERMINATION OR COUNTRY Cultural land management must be self-determined and rights based	Develop collaborative structures that respect Indigenous self-determination	Establish five-year and informal sunset mechanisms for collaborations
2. RECONCILIATION, SOCIAL JUSTICE Indigenous peoples have the right to speak authoritatively about Country	Resource and support representative bodies to act as partners	Require to design and to deliver with representative bodies
3. HEALTHY COUNTRY, HEALTHY SPIRIT, HEALTHY PEOPLE Cultural leadership and resurgence through caring for Country 'our way'	Resource and support capacity-building bodies to act as partners	Establish agreements that provide long-term and secure access to Country
4. EMPowerment OF INDIGENOUS KNOWLEDGE-HOLDERS Recentre women and their unique role within Country	Resource and support Indigenous women according to self-determined pathways	Establish guidelines for developing and protecting sacred and significant cultural sites
5. BENEFITS WITH AND FOR INDIGENOUS COMMUNITIES Support truth-telling and healing	Develop awareness of historical and contemporary issues facing Indigenous peoples	Make place-based cultural sustainability training compulsory for all staff
6. ENGAGEMENT OF INDIGENOUS KNOWLEDGE-HOLDERS Address racism and promote cultural safety	Develop training and policies to foster cultural safety and acceptance	Establish cultural safety frameworks and embed in all induction processes
7. BENEFITS WITH AND FOR INDIGENOUS COMMUNITIES Healing Country and healthy people are intertwined	Resource and support Indigenous people's connection to Country and to culture	Establish formal partnership agreements to support in Country practice
8. BENEFITS WITH AND FOR INDIGENOUS COMMUNITIES Centres Country, culture and kin in contemporary land management	Develop policies that consider, measure, and monitor cultural and natural values	Establish the cultural mentoring routing to support in Country practice
9. BENEFITS WITH AND FOR INDIGENOUS COMMUNITIES Cultural land management is living knowledge and culture	Regulatory changes to domestic times to full and monitor cultural and natural values	Establish networks for Elders and children language and non-English speaking values
10. BENEFITS WITH AND FOR INDIGENOUS COMMUNITIES Empower Indigenous knowledge and knowledge-holders	Recognise and support Indigenous people's system in cultural practices of Country	Review and update all Indigenous participation in natural values
11. BENEFITS WITH AND FOR INDIGENOUS COMMUNITIES Manage, protect, and share knowledge	Develop policies to protect Indigenous Cultural and Traditional Property	Develop local agreements that protect Indigenous Cultural and Traditional Property
12. BENEFITS WITH AND FOR INDIGENOUS COMMUNITIES Transfer and maintain the relationship of knowledge	Recognise and support community learning pathways, processes and practices	Develop project templates to reflect Indigenous processes and protocols
13. BENEFITS WITH AND FOR INDIGENOUS COMMUNITIES Impact and value come through engagement and inclusion	Resource and support Indigenous people to define measures of success for projects and programs that affect them	Establish self-determined decision points to meet definition of measures of success
14. BENEFITS WITH AND FOR INDIGENOUS COMMUNITIES Strong partnerships are based on shared understanding, respect and trust	Resource and support meaningful and trusting connections with community	Support the context and monitor intention of staff working with Indigenous peoples
15. BENEFITS WITH AND FOR INDIGENOUS COMMUNITIES Accountability through outcome monitoring and reporting	Resource and support transparency in monitoring and reporting	Establish protocols for public or partnership outcome accountability
16. BENEFITS WITH AND FOR INDIGENOUS COMMUNITIES Indigenous peoples and organisations are diverse	Resource and support local approaches to reflect local realities	Develop localised agreements with Indigenous peoples
17. BENEFITS WITH AND FOR INDIGENOUS COMMUNITIES Embed flexible and purpose-driven policy and processes	Resource and support local approaches to reflect local realities	Maintain awareness of Indigenous Cultural and Traditional Property
18. BENEFITS WITH AND FOR INDIGENOUS COMMUNITIES Indigenous peoples and organisations are diverse	Develop localised agreements with Indigenous peoples	Identify full range of Indigenous relationships, including past and present

Author: Dr. Emma 'Pier' Mackinnon | Photo credit: iStock.com/longway

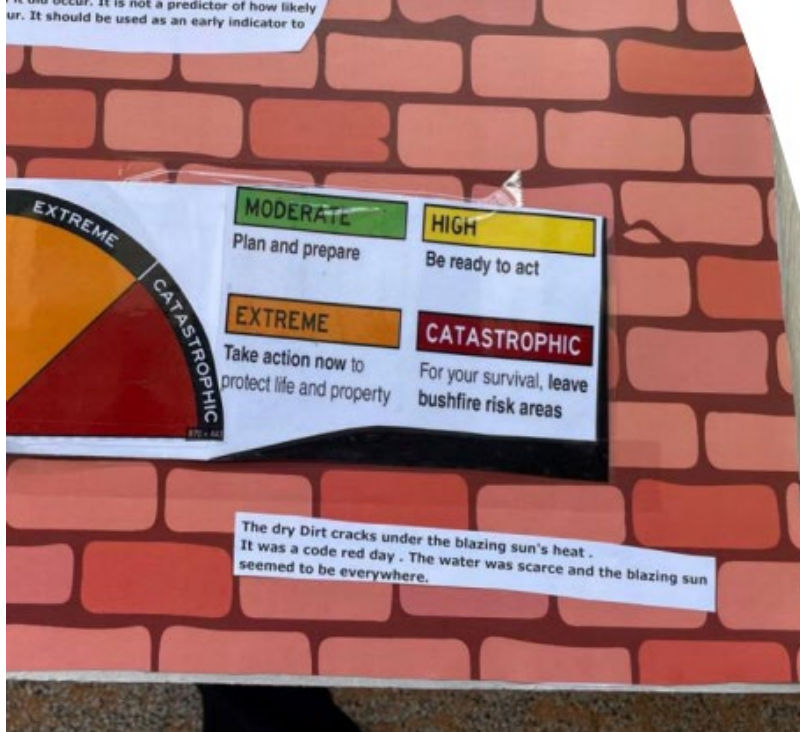


Black Summer 2019-2020 Research

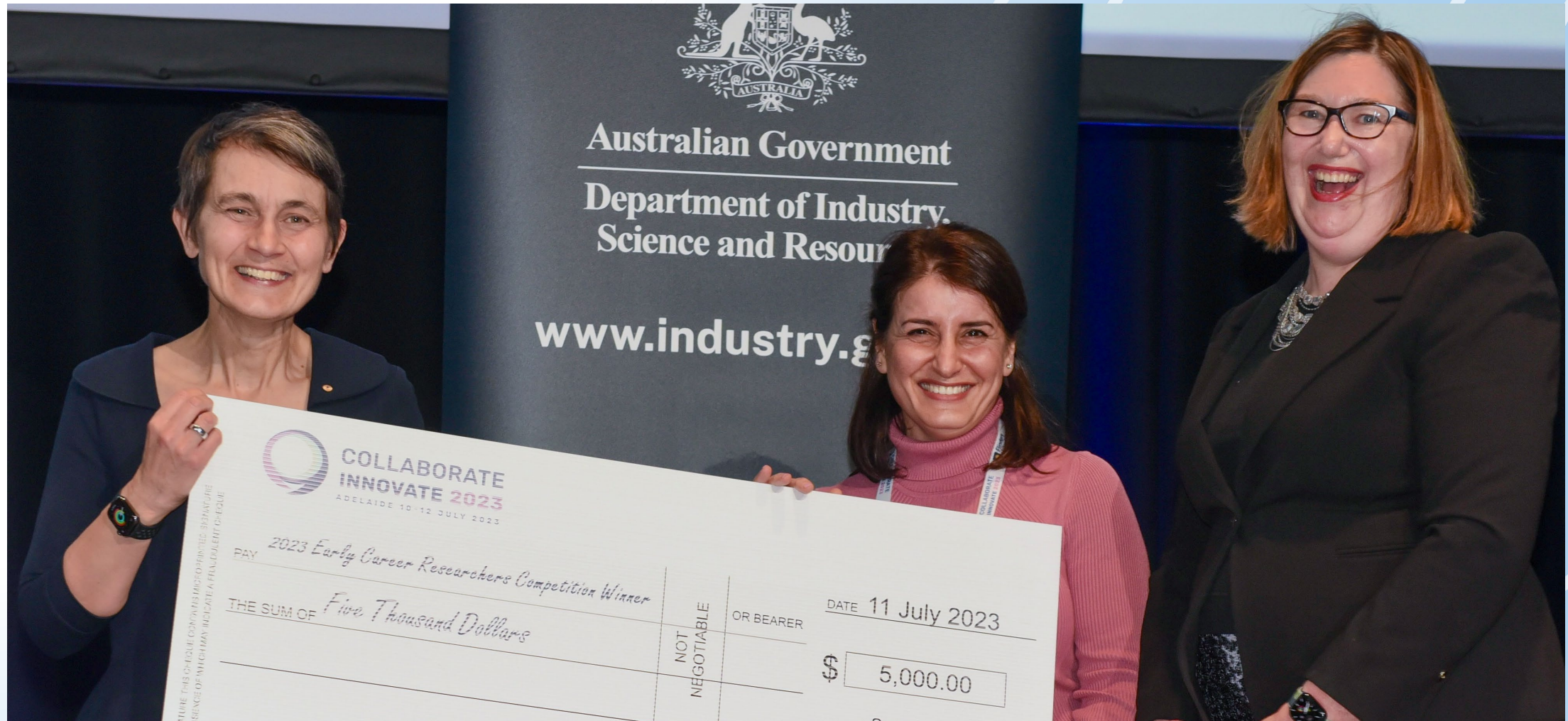
- 23 projects, 28 organisations
- Multi-discipline
- Why was this fire season so devastating?
- What new capabilities can be implemented?
- How can Australia learn from its worst season?
- Research leading to action
 - Better bushfire modelling
 - Better warnings
 - Better land management
 - Better recovery

<https://www.naturalhazards.com.au/black-summer>





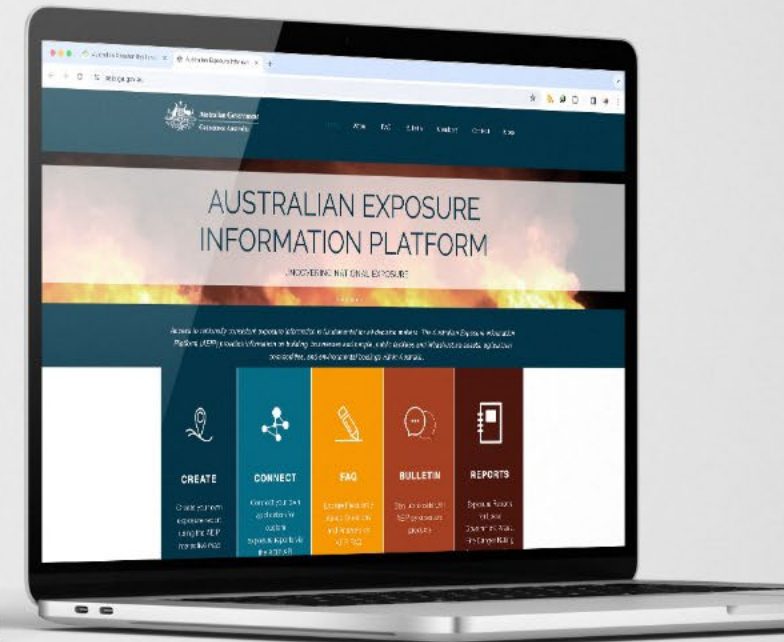
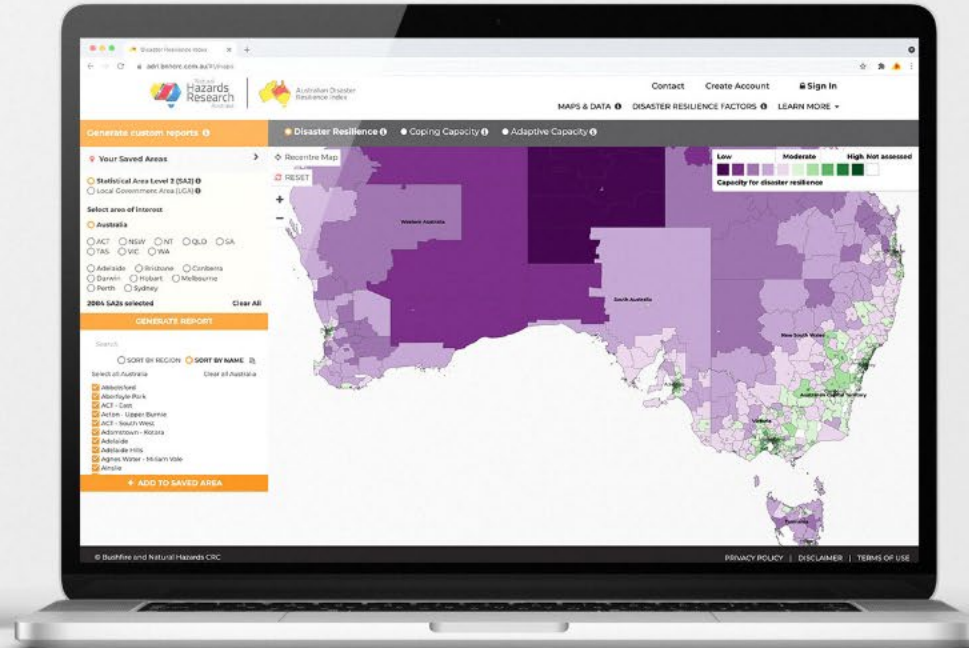
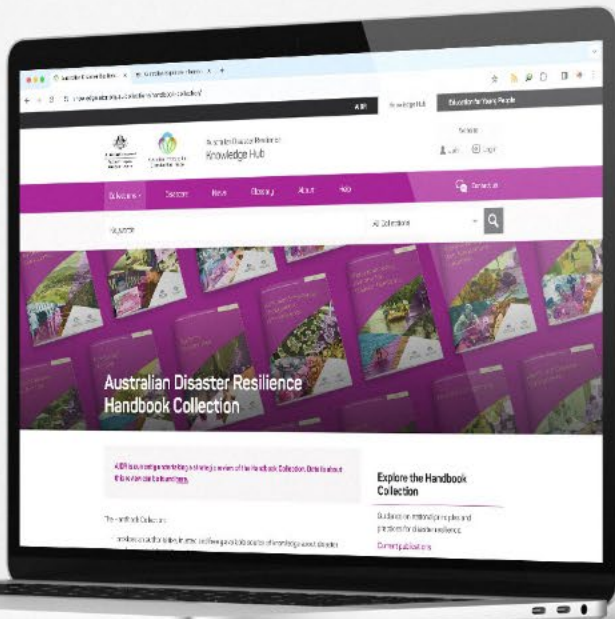
Award – Early Career Researcher



NHRA RESEARCH INFORMED
AIDR HANDBOOK
18,348
DOWNLOADS

AUSTRALIAN DISASTER
RESILIENCE INDEX
491,000
USER SESSIONS

AUSTRALIAN EXPOSURE
INFORMATION PORTAL
40,000
REPORTS GENERATED



"The value of these CSAs is they are informed by the research and they are nationally consistent – no matter which state or territory you're in, you'll hear the same safety messages."

Research progress

MARCH 2024 FLYER

Find a project on the web:

Core Research - 57

Associated student - 22

Postgraduate - 21

Early Career Research - 4

Responsive disaster research - 9

\$18M FUNDING ALLOCATED
6:1 ROI

39 PHD STUDENTS AND 22 ASSOCIATE PHD STUDENTS
4 ECR FELLOWSHIPS AWARDED

32 TOTAL PARTICIPANTS
52 PROJECTS IN PROGRESS
3 COMPLETED

24/24 ACTIONS OF NATIONAL ACTION PLAN FOR DRR SUPPORTED
47 RESEARCH PROVIDERS

Research Australia projects are grouped by foundational, change themes and further organised under topic themes.

Functional themes

Bushfire risk at the rural–urban interface

THEME 4 THEME 5

Community risk assessment

THEME 4 THEME 1

Decision making in emergency management

THEME 4 THEME 1

Developing an integrated predictive capability for extreme rainfall and inundation

THEME 4

End-user engagement to enhance severe weather impact prediction

THEME 4 THEME 6

Fire ember transport

THEME 4 THEME 6

Identifying and defining landscape dryness thresholds for fires

THEME 4

Identifying water sources for aerial firefighting

THEME 4 THEME 6

Long-range flood outlook for strategic preparedness

THEME 4

Integrated solutions for bushfire-adaptive homes

THEME 2 THEME 5

Modelling impacts of sequential cascading natural hazards on the built environment

THEME 2

Safety of alternative and renewable energy technologies

THEME 2 THEME 4

Conserving and reconnecting floodplains to mitigate flood risk

THEME 3

Effect of cultural burning on soil health

THEME 3 THEME 7

Cultural land management research and governance in south-east Australia

THEME 3 THEME 5

Healing Country through Wolgalu/Wiradjuri-led land management

THEME 3 THEME 7

Operationalising Aboriginal land and sea management

THEME 3 THEME 7

Core fire research portfolio

Operational response and innovation
Situational awareness
Learning from disasters
Communities and workforces
Evidence informed policy, strategy

8 THEMES

- **Why fly? How do we know that aerial firefighting operations are effective and efficient?** (AFAC, NAFC – UOW, CSIRO)
- **Bushfire risk at the rural–urban interface** (QFES, DFES, NSW RFS, CFA, DEECA, TFS - UTAS)
- **Identifying water sources for aerial firefighting** (AFAC, GA, NAFC, CFA - Frontier SI)
- **Identifying and defining landscape dryness thresholds for fires** (CFA – UMELB)

- **Detecting fire plumes with mobile radar** (DFES, CFA, NSW RFS, DEW – BoM, Monash Uni)
- **Capturing uncertainty in bushfire spread prediction** (NSW RFS – UOW)
- **What makes a good fire simulator?** (AFAC, CFA, NSW RFS - UMELB)

- **Integrated solutions for bushfire-adaptive homes** (CFA, NSW RFS – CSIRO, RMIT, UMELB, Strahan Research)
- **Translation of observed and modelled extreme bushfire behaviours to improve fire prediction and fireground safety** (BOM, CFA, DEECA, Curio)
- **Fire case studies** (DFES, CFA, NSW RFS - BOM)
- **Predictions in public: understanding the design, communication and dissemination of predictive maps to the public** (AFAC, QFES, DFES, BF NT, ACT RFS, CFA, CFS, TFS, NSW RFS, BOM, DECCA – Deakin, QUT, RMIT, SUT)
- **Schools in Fire Country** (CFA – Leadrrr)
- **Bushfire information database - scoping study** (USYD, RMIT, CSIRO)
- 13 Projects

Core First Nations research portfolio

Sustainable safe and healthy landscapes
Resilient communities
Communities and workforces

- **Cultural land management research and governance in south-east Australia** (NSW Dept Planning & Environment – Deakin Uni)
- **Operationalising Aboriginal land and sea management** (NSW Dept Planning & Environment)
- **Healing Country through Wolgalu/Wiradjuri-led land management** (Brungle – Tumut Local Aboriginal Land Council & NSW DCCEEW– Uni of Wollongong)
- **Effect of cultural burning on soil health** (yet to commence)

- **Foundations in Indigenous disaster resilience** (AIDR – Monash Uni)

- **Connecting Indigenous people and the emergency management sector – effective partnerships** (Northern Australian Indigenous Land and Sea Management Alliance)
- **Cultural load and conflict: understanding experiences of First Nations staff and volunteers within Australian emergency, land management and resilience sector** (Fire & Rescue Vic, QFES, NSW NPWS)
- **Cross-cultural relationships in natural resource management: understanding the nature and experiences of partnership and collaboration** (Postgrad Student)

- 8 projects

Core multi-hazard research portfolio

Operational response and innovation
Resilient built environment
Communities and workforces
Evidence informed policy, strategy

8 THEMES

- Multi-hazard evacuation modelling for effective emergency management: A collaborative workshop series (DEECA)
- Awareness, education and communication for compound natural hazards (QFES, NSW RFS, BoM, TFS, RFS)
- Enhancing decision making in emergency management
- Understanding the resilience of lifelines for regional and remote communities
- Support integration of Recovery Capitals in service plans for communities with different levels of social disruption
- Community risk assessment

- Safety of alternative and renewable energy technologies
- Reimagining emergency management volunteering: more than just words
- Connecting Indigenous people and the emergency management sector – effective partnerships
- Cultural load and conflict: understanding experiences of First Nations staff and volunteers within Australian emergency, land management and resilience sector
- Research data management
- Selection of the 26 Projects

Early career research (ECR)

- Bushfire mitigation and hazard reduction in Australian law (Complete)
- Wildfire Law and Policy Network
- Interdisciplinary collaborative platform for reducing future bushfire risk and increasing community resilience
- Fostering international collaborations and improving science communication for disaster recovery
- ECR: 4 of 4 projects
- Students: 5 of 18 fire projects

Students

- UAV trajectory optimization for pre- and post-bushfire disaster assessment using artificial intelligence
- Productivity and effectiveness of suppression resources and tactics on large fires
- Developing novel geochemical and spectroscopic techniques to extend existing bushfire records
- Impact of bushfire smoke on the ocular surface
- Impact of fires on temperate rainforests in northern New South Wales
- Selection of the 26 Projects

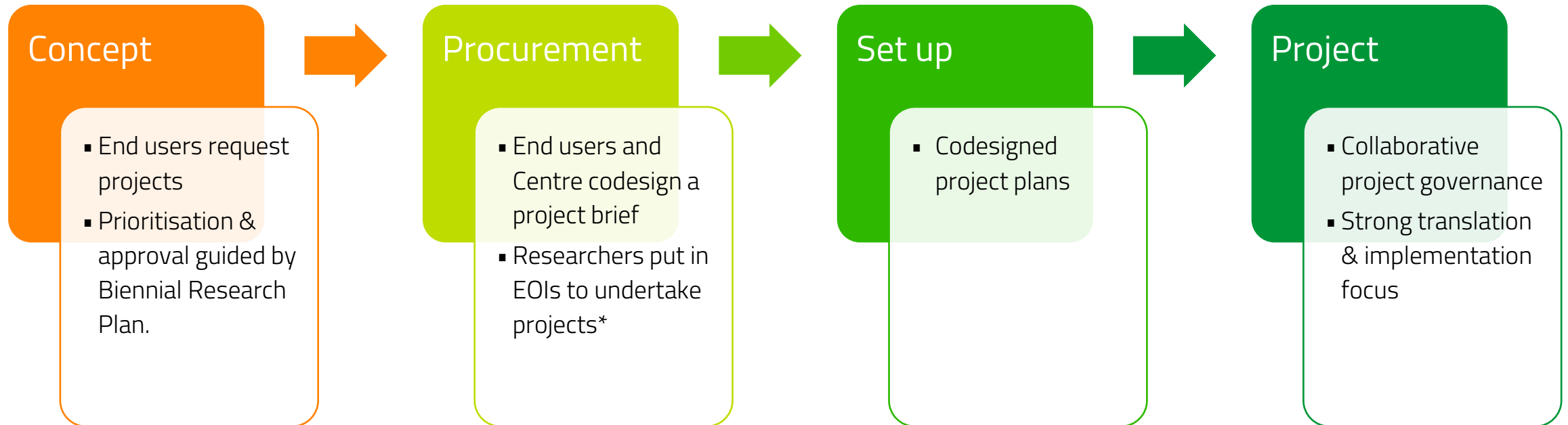
Operational response and innovation
Situational awareness
Learning from disasters
Communities and workforces
Evidence informed policy, strategy
Sustainable safe and healthy landscapes
Resilient communities

Who can submit a project concept?

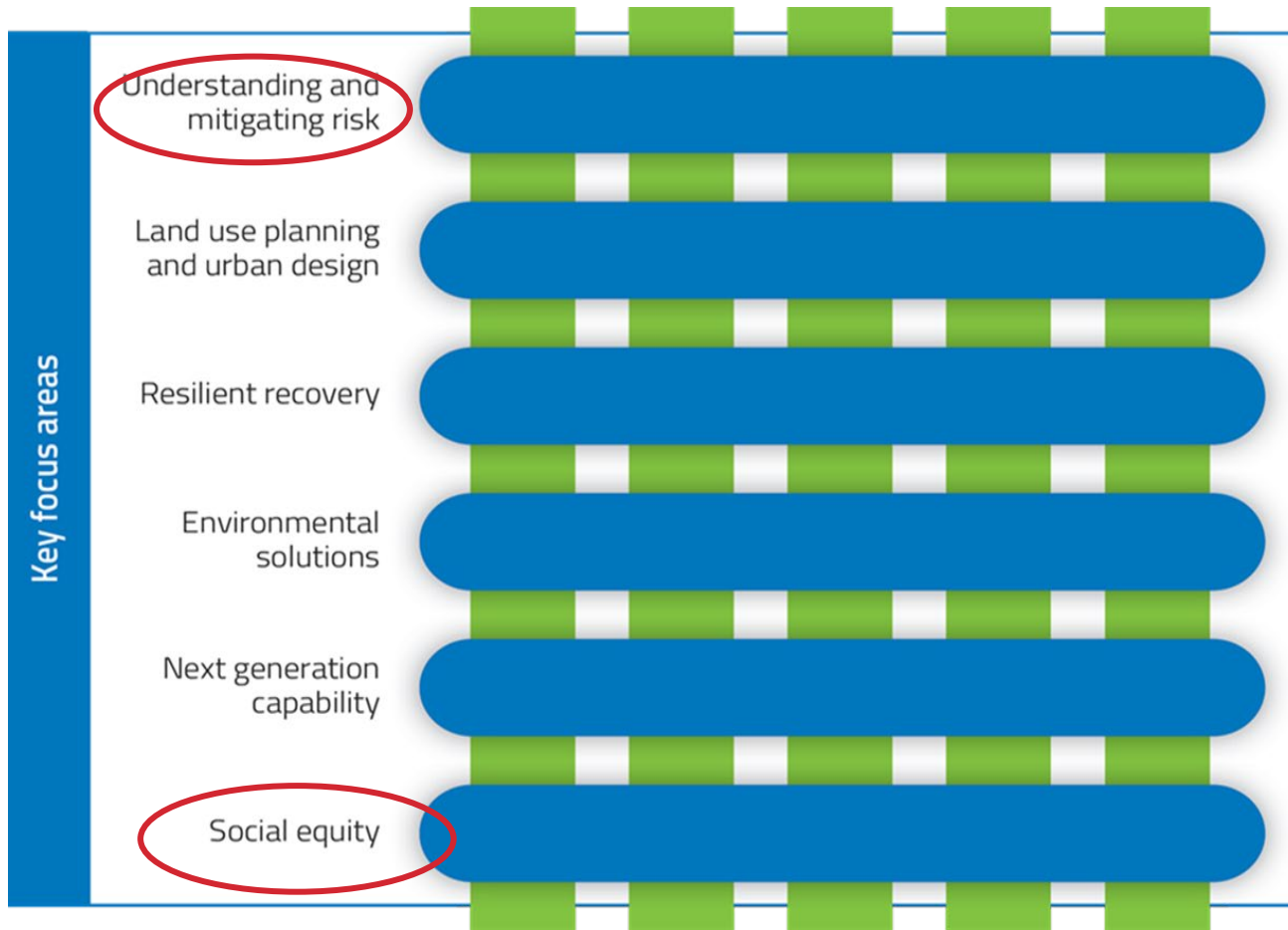
- Research concepts must be submitted by representatives of one of the Centre's Participants¹.
- The Centre encourages submitting Participants to build collaborations with other organisations across multiple states and territories to demonstrate the national significance of the concept.
- **Note: The Centre does not accept project concepts from research organisations.**

¹. Organisations or entities (or representative thereof) that have been contracted through a Participant Agreement with the Centre.

How the project concept phase fits into the way we work



*Strong preference to use open call for EOIs



2024 Disaster Challenge

THE CHALLENGE

IN A WORLD WHERE TRUST IS BOTH VITAL AND FRAGILE, HOW CAN WE BUILD AND SUSTAIN TRUST ACROSS OUR WHOLE SOCIETY TO DRIVE THE COLLECTIVE AND COORDINATED ACTIONS THAT ARE FUNDAMENTAL TO REDUCING THE RISKS AND IMPACTS OF DISASTERS, AND STRENGTHENING THE SAFETY, SUSTAINABILITY AND RESILIENCE OF ALL AUSTRALIANS?



FROM THE DISASTER CHALLENGE

A 3D graphic featuring the text 'FROM THE DISASTER CHALLENGE' in a bold, blocky font. The words are arranged in a staggered, overlapping manner. 'FROM' is on the left, 'THE' is slightly behind it, 'DISASTER' is in the center, and 'CHALLENGE' is on the right. The letters are primarily yellow and blue, with some orange accents. Two orange gears are integrated into the design, one at the top right and one at the bottom center. The background is a gradient of yellow and pink.

LEARN MORE AT OUR ONLINE BRIEFINGS

**ONLINE BRIEFING TWO –
UNDERSTANDING THE WICKED
PROBLEM**

Thursday 6 June, 4pm AEST



<https://www.naturalhazards.com.au/disaster-challenge/>

26 August 2024

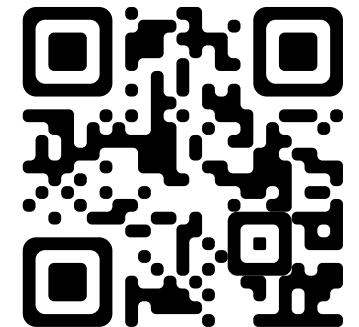
Be part of
the journey



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Thank you



1. Subscribe to our newsletter
[Natural Hazards Research Australia
\(list-manage.com\)](https://list-manage.com)

2. Encourage you to consider
developing a joint research concept

3. Attend our online Hazardous
Webinars

5. Start a PhD 😊

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Research@naturalhazards.com.au

A large graphic for the Natural Hazards Research Forum 2024. It features a stylized green hand holding a magnifying glass over a globe. The text "NATURAL HAZARDS RESEARCH FORUM" is prominently displayed in green and black, with "ADELAIDE, 14-16 MAY 2024" below it. A blue banner at the bottom says "Discover research with impact #NHRF24". Below this, there is a call to action: "Register now for the Natural Hazards Research Forum 2024 in Adelaide with a program filled with the latest sector research. Be part of the discussion and planning for the future of natural hazards research across the country. Learn more." A blue button with the text "REGISTER NOW" is visible. At the bottom right, there are two small images: one showing a landscape with mountains and water, and another showing three men in suits sitting together.

**NATURAL
HAZARDS**
RESEARCH FORUM
ADELAIDE, 14-16 MAY 2024

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REGISTER NOW

