Natural Hazards Research Australia

Call for Expressions of Interest

T8-A2: Managing first responders' heat stress risk

Expressions of Interest due **5pm AEST, 14 April 2025**
to research@naturalhazards.com.au

Australian Government

Overview

Natural Hazards Research Australia (hereafter the Centre) is seeking Expressions of Interest (EOI) from project teams for the following project:

T8-A2 Managing first responders' heat stress risk

Project description	This project aims to deepen the understanding of the multifaceted nature of heat stress experienced by first responders, integrating diverse dimensions encompassing environmental, physiological and occupational factors. By clarifying the intricate interplay of these elements within the unique context of first responding, the project will develop a holistic understanding of heat stress within the sector. The project will employ contemporary methodologies to better understand heat sources and heat-stress environments and the related physiological responses of first responders in real-world scenarios, considering variations in environmental conditions, firefighter demographics including life stages, event/incident intensity, impact of existing personal protective equipment (PPE) and practices to mitigate the risk of heat stress. Overall, this project aims to empower stakeholders with comprehensive knowledge to mitigate the risks associated with heat stress, safeguard first-responder health and enhance their resilience in facing the demanding conditions they encounter.
Estimated duration	Three years
Budget	The budget envelope for this project is $500,000 to $750,000 (ex GST) The research team should note that this is a competitive process. Expression of Interest submissions will be assessed on value for money and justification for any funds requested.
Related national research priorities[1]	→ Communities and workforces of the future → Operational response and innovation
Related Centre research priorities for 2024–26[2]	→ Next generation capability → Future workforce
Supporting organisations	→ Queensland Fire Department (QFD) → Fire and Rescue NSW (FRNSW) → Department of Fire and Emergency Services – WA (DFES) → Bushfires NT → NSW Rural Fire Service (NSW RFS) → Australasian Fire and Emergency Services Authorities Council (AFAC)
Centre contact	For any questions regarding this Call for EOIs, please email research@naturalhazards.com.au
Online project briefing	For more information or questions, an online project briefing webinar will be held at **2:00 pm AEDT on 2 April 2025**
Submission of EOI	EOIs must be prepared using the Centre's EOI submission form and Budget Template. EOIs are to be submitted to research@naturalhazards.com.au by **5:00 pm AEST, 14 April 2025**

1 Natural Hazards Research Australia (2022) National research priorities for disaster risk reduction and community resilience to the impacts of natural hazards, accessible at www.naturalhazards.com.au/sites/default/files/2022-05/NatHazResAus ResearchPriorities FA02.pdf

2 Natural Hazards Research Australia (2024) *Biennial Research Plan 2024–26*, accessible at https://www.naturalhazards.com.au/sites/default/files/2024-07/NHRA%20ResearchPlan24%E2%80%9326%2004.pdf

Natural Hazards Research Australia

Statement of requirements

Background and context

The need to investigate heat stress in first responders arises from the critical need to safeguard the health and wellbeing of frontline personnel who regularly face extreme conditions. While first responders play a pivotal role in ensuring public safety, their requirement to perform physically demanding work while wearing personal protective equipment (PPE) in hot and humid environments poses significant risks to their physiological and psychological health. The urgency lies in comprehending the intricate dynamics of heat stress within emergency response contexts to mitigate its detrimental effects and enhance the resilience of those essential responders. That urgency is pressed further when considering already evidenced environmental factors within those contexts, such as rising average temperatures and impacts on rainfall and humidity patterns (State of the Climate 2024, The Bureau of Meteorology).

This project will help bridge a substantial knowledge gap surrounding the nuanced facets of heat stress experienced by first responders and develop critical strategies to mitigate risk in the first responder context. Current studies provide insights into the physiological impact of heat stress, yet they often lack contextual specificity to the unique demands of first-responder scenarios – both operational and training – that can inform heat stress management strategies. There is a dearth of comprehensive research that intricately analyses the multifaceted nature of heat stress within the environments first responders encounter, considering factors like Australia's diverse and often extreme environmental conditions, varying event intensities and duration of exposure, geographical isolation, resource limitations and PPE. The first responder workforce is evolving, with shifts such as ageing and increasing diversity. It is crucial to understand and address the impact these shifts have on responders and their agencies. Stakeholders, including agency leadership, medical professionals, equipment manufacturers and policymakers, seek a deeper understanding of how heat stress affects first responders' health outcomes, long-term wellbeing and performance. They aspire to develop more effective strategies, preventive measures, training protocols, work/rest cycles and advanced equipment that adequately addresses the specific challenges posed by heat stress.

Presently, stakeholders lack comprehensive insights into tailored strategies to mitigate the risks associated with heat stress in their unique yet varied occupational settings. The project will empower stakeholders with actionable knowledge to design and implement targeted and contextually based interventions, such as enhanced training protocols, optimised work-rest cycles and improved cooling mechanisms in equipment. By addressing these crucial knowledge gaps, the project endeavours to equip stakeholders with the tools and understanding required to safeguard first-responder health and optimise their performance in different temperature environments. Ultimately, the goal is to enable stakeholders to proactively protect and support the wellbeing of first responders, ensuring their continued safety and effectiveness in safeguarding communities.

The project stems from both senior agency leadership and the frontline of emergency management, inspired by concern for the wellbeing of first responders exposed to the rigours of heat stress whilst working in increasingly hot and humid environments whilst wearing PPE. Founded in the experiences of both witnessing and recording the physical toll and health implications of prolonged physically and cognitively demanding work in hot and humid environments, this concept seeks to delve into the multifaceted dimensions and ramifications of heat stress within first-responder contexts, including likely intertwining environmental, physiological, and occupational aspects.

The intent is to unravel crucial insights into mitigating heat stress. It aspires to a more coordinated and comprehensive understanding of heat sources and environments, behavioural adaptations and tailored interventions that can be practically implemented in the operational environment. This will equip first responders with enhanced resilience and strategies to combat the risks to health, wellbeing and operational capability presented by heat stress.

The broad relevance and cross-jurisdictional nature of the project has attracted stakeholder support from Fire and Rescue New South Wales, the Department of Fire and Emergency Services Western Australia, Bushfires NT (Northern Territory) and the New South Wales Rural Fire Service. The project ultimately stands as a testament to the proactive stance of emergency sector leadership, prioritising the wellbeing of personnel by directing a concerted effort to confront and alleviate the challenges posed by heat stress.

Project description

This project aims to deepen the understanding of the multifaceted nature of heat stress experienced by first responders, integrating diverse dimensions encompassing environmental, physiological and occupational factors. By clarifying the intricate interplay of these elements within the unique context of first responding, the project will develop a holistic understanding of heat stress within the sector.

The project will employ contemporary methodologies to better understand heat sources and heat-stress environments and the related physiological responses of first responders in real-world scenarios, considering variations in environmental conditions, firefighter demographics including life stages, event/incident intensity, impact of existing PPE and practices to mitigate the risk of heat stress.

Overall, this project aims to empower stakeholders with comprehensive knowledge to mitigate the risks associated with heat stress, safeguard first-responder health and enhance their resilience in facing the demanding conditions they encounter.

Expected outputs

Outputs are the products that are expected to be delivered by this project.

Core outputs

- Literature review
- Framework
- Final report – including recommendations related to heat stress and heat health that are realistic and genuinely achievable
- Training and education products
- Stakeholder presentation/s
- Academic publications in high-ranking international journals
- Please detail other innovative outputs that your team can deliver to address the outcomes below.

Additional outputs

- Project plan and plain language statement
- Quarterly progress reports
- Project evaluation report
- Relevant communications outputs including but not limited to a presentation and a poster

Collaborative approach

Researchers are expected to undertake the research using a collaborative approach to assist in the translation and transfer of knowledge to end-users and to ensure the project meets their needs. Researchers are encouraged to outline their approach to ensuring effective collaboration which could include embedding researchers within end-user organisations for a period of time.

Anticipated outcomes

This project is anticipated to produce multifaceted outcomes with tangible and intangible benefits. Tangibly, the project is expected to yield measurable results such as a quantified understanding of intersecting heat sources and heat-stress environments that could, in turn, be directed towards optimising protocols for managing first responders' exposure to extreme temperatures and potential improvements in PPE design for enhanced heat dissipation and resilience.

These measurable outcomes could further translate into reduced instances of heat-related injuries, improved performance metrics and lowered healthcare/workers compensation costs associated with treating heat-related ailments. Additionally, the project foresees intangible yet invaluable benefits. It is expected to foster a culture of proactive health management within the emergency sector, raising awareness about the nuances of heat stress and promoting adaptive behavioural changes. It may lead to enhanced resilience, camaraderie and mental preparedness among first responders, fostering a sense of empowerment and wellbeing.

Additionally, the project's findings could contribute to broader occupational health discussions, influencing policies and practices not just within the emergency management sector but across professions facing similar challenges, thereby impacting the broader spectrum of workplace safety and wellbeing.

Quality control and reporting

The project will be overseen and supported by a Project Management Committee (PMC) comprising the Principal Researcher, a Centre representative, and at least one stakeholder representative. Composition of the PMC will be determined in consultation with the Principal Researcher.

Reports

The Centre expects that the outputs delivered by this project will meet the highest scientific standards and will be suitable for publication on the Centre website and in industry newsletters, as well as in high-quality scientific journals.

The successful research organisation/s must co-develop with end-users a project plan and project summary using the Centre's templates. The project summary should explain in plain language what the project is about, what questions it intends to answer and describe the expected practical outputs that will make use of the research findings. The project plan must be approved by the PMC and will become an attachment to the contract.

Reports (and any supporting material) must be submitted to the PMC's satisfaction and will be subject to review by PMC members. The project team will be required to ensure an internal peer review process is undertaken prior to the final report being submitted.

Milestone reporting

The project team must report all milestone deliverables and engagement activities into the Centre's Project Management System. This will include sufficient justification for the completion of milestones to the satisfaction of the PMC and the Centre.

Communication

To further assist with quality assurance, it is expected that:

- regular PMC meetings will be held
- the project team will use a consultative approach, documented in quarterly reports
- the Principal Researcher will give periodic presentations to key stakeholder groups to gain critical feedback on project milestones.

Additional quality control processes may be agreed as part of the project planning process.

Contractual arrangements

A copy of the 'Research Services Agreement', the proposed form of contract for the purposes of this project, can be found here.

The Centre reserves its rights to make amendments to the form of contract.

This agreement should be reviewed by applicants as part of the EOI submission.

If you would like to request amendments to any of the terms and conditions set out in the proposed form of contract, details of the proposed changes and the reason the changes are requested must be included in the EOI submission form. Requests for any changes will be at the sole discretion of the Centre.

Selection as a shortlisted or preferred provider does not give rise to a contract (express or implied) between the shortlisted or preferred provider and the Centre for the supply of goods or services. No legal relationship will exist between the Centre and the shortlisted or preferred provider until such time as a binding contract in writing is executed by both parties.

In the case of consortiums, the Centre requests that one consortium member be nominated as Lead Research Provider and take responsibility for subcontracting other parties.

Submitting an Expression of Interest

Application and review process

Project selection and approval will be a two-stage process. The first stage is evaluation of the EOIs that are received. The second stage is development of a project proposal, where a preferred provider will be selected and offered an opportunity to co-develop a detailed project proposal with input from key stakeholders.

Key dates

17 March 2025	Call for EOIs opens
2 April 2025	Online project briefing
14 April 2025	Due date for EOIs

Submission requirements for this EOI

Project teams responding to this EOI are required to submit their response using the Centre's EOI submission form and Budget Template. Submissions must include:

- a statement of capability (max 600 words), including the proposed contributions of each research team member to the project
- a statement (max 400 words) about the diversity of the project team
- a statement (max 400 words) about the project's inclusion and respect of First Nations peoples, philosophies, cultures, rights and/or knowledges
- an outline (max 1000 words) describing how the project team intends to approach the project, strategies for effective collaboration and an indicative methodology
- an indicative schedule of work and interim milestones/project outputs as described in this document
- a proposed project budget in line with the budget envelope provided, including details of any in kind contribution from research organisation/s – a detailed budget to be provided using the downloadable Budget Template provided on the Centre's website
- a clear statement (max 400 words) describing the outcomes that will be delivered for this project and how they will be used by stakeholders
- a clear statement (max 400 words) describing the outputs that the proposed approach to this project will deliver and how the findings could translate into practice
- a statement (max 500 words) demonstrating the project team's relevant industry and stakeholder engagement
- a risk management statement (max 500 words)
- any requested changes to the Centre's proposed form of contract
- up to two-page CVs for each proposed project team member.

Additional information

In responding to this Call for Expressions of Interest, advice should be provided on any known or anticipated impacts of COVID or other pandemic restrictions or human resource risks on the timely delivery of the project. Where appropriate, risk management for the impacts of pandemic restrictions should be incorporated into the EOI.

Frequently asked questions

Additional information provided to individual respondents will also be published on the Centre's website to ensure access to all interested parties. Respondents are encouraged to check the website for any additional information via these published FAQs, prior to the closing date.

Online project briefing

An online webinar scheduled for **2:00 pm AEDT on 2 April 2025** will provide a more detailed briefing of the project and the opportunity for interested parties to pose specific questions.

Registrations for this webinar can be made via the project page on the Centre's website. Once completed, a recording of this webinar will be posted to the website to ensure all interested respondents have access to this information.

Evaluation criteria

After the closing date, the Centre will review submitted EOIs against the evaluation criteria below. The evaluation criteria provide an indication of those matters that should be included in the EOI and supporting material – details are provided in the table below.

The Centre reserves the right not to offer the work, or only allocate a proportion of the available funding, if a proposal does not meet the Centre's needs. The Centre reserves the right to invite any other specific researchers as it sees fit to submit proposals before or after the closing date.

Evaluation criteria	% weighting
Research capability: the capacity and capability to deliver an excellent research project in an Australian environment	25
Project approach: a demonstrated understanding of the project requirements and a proposed project approach and methodology that is appropriate, feasible and robust Relevant outline of a collaborative approach to assist in the translation and transfer of knowledge to end-users and to ensure the project meets their needs.	20
Project outcomes and outputs: demonstrate a high-level understanding of the intentions of the project and how outputs/outcomes translate to practice	20
Industry engagement: strong track record of industry engagement with the ability to support and influence Australian disaster management at a national or state/territory level through interaction with key stakeholders	15
Value for money: delivery of required outcome within available budget along with the ability to leverage the funds provided with in-kind contributions or supplementary opportunities	20