



Natural  
**Hazards  
Research**  
Australia

# Call for Expressions of Interest

T8-A4: Multi-hazard resilient buildings

Expressions of Interest due **5PM AEST, 16 MAY 2025**  
to [research@naturalhazards.com.au](mailto:research@naturalhazards.com.au)



Australian Government

[naturalhazards.com.au](http://naturalhazards.com.au)

Australia's leading research centre for natural  
hazard resilience and disaster risk reduction

# Overview

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

## T8-A4 Multi-hazard resilient buildings

<b>Project description</b>	<p>This project aims to review current building standards and guidance in relation to multi-hazards across Australia with a particular focus on New South Wales (NSW). The project aims to analyse existing building requirements and guidelines for bushfire, flood, coastal erosion, inundation, sea level rise, heatwaves, tsunami, storm, landslide, cyclones, earthquakes, drought and tornadoes across Australia. The project will also consider national and international best practice standards for building and construction to address multiple hazards and identify gaps and opportunities for improvement.</p> <p>To achieve this, the project will:</p> <ul style="list-style-type: none"> <li>→ analyse whether current standards should be expanded beyond existing applications (e.g. extending cyclonic controls further south or bushfire controls beyond 100m from mapped vegetation)</li> <li>→ analyse necessary building elements required under different hazard conditions</li> <li>→ identify best practice building standards, materials and designs applicable across different states and territories</li> <li>→ analyse how building elements and systems of these elements work together for different hazards</li> <li>→ analyse testing methods of building elements for structural integrity under multi-hazard conditions and ensure potential reoccupation after a natural hazard</li> <li>→ investigate the impact of exceeding test limits, comparing catastrophic failures with gradual failure (or fail-safe design).</li> </ul>
<b>Estimated duration</b>	Three years
<b>Budget</b>	<p>The budget envelope for this project is \$700,000 to \$900,000 (ex GST)</p> <p>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.</p>
<b>Related national research priorities<sup>1</sup></b>	<ul style="list-style-type: none"> <li>→ Resilient built environment</li> <li>→ Resilient communities</li> <li>→ Evidence-informed policy, strategy and foresight</li> </ul>
<b>Related Centre research priorities for 2024–26<sup>2</sup></b>	<ul style="list-style-type: none"> <li>→ Land-use planning and urban design</li> <li>→ All hazards</li> </ul>

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](http://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>

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**Supporting organisations**

- Australian Building Codes Board
- NSW Building Commission
- NSW Department of Planning, Housing and Infrastructure
- NSW Department of Customer Service
- NSW State Emergency Service
- NSW Reconstruction Authority

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**Centre contact** For any questions regarding this Call for EOIs, please email [research@naturalhazards.com.au](mailto:research@naturalhazards.com.au).

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**Online project briefing** [For more information or questions, an online project briefing webinar will be held at **1:00pm AEST on 14 April 2025**

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**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](mailto:research@naturalhazards.com.au) by **5:00pm AEST on 16 May 2025**

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# Statement of requirements

## Background and context

Across Australia, communities are experiencing more natural hazards causing millions of dollars in damages every year, which is set to increase due to the effects of climate change. In Australia, we have historically built our homes next to natural features for lifestyle reasons, which due to proximity also increases our exposure and risk. Mitigation measures to reduce risk through building standards, codes and guidance for natural hazards vary significantly for hazards and within Australian states.

Many communities are subject to more than one hazard, which can occur concurrently or in rapid succession. The mitigation measures and risk assessment practices for each hazard vary significantly. Projected change to risk from compound extremes remains a relatively understudied area (CSIRO 2020 Climate and Disaster Resilience Technical Report).

In Australia, there is an Australian Standard for construction of bushfire-prone land, the Building Code of Australia has requirements for cyclones and there is a range of guidance documents available for flood and landslide. The Australian Building Codes Board also has a flood standard that sets technical requirements for buildings in flood-prone areas and is referenced in the National Construction Code. Despite this, there are still gaps on guidance or building controls in relation to storm, hail and other natural hazards. This diverse application of standards for construction also means disparity in mitigating against damage, loss and social impacts for communities across the country.

Climate extremes already affect many facets of Australian society including health, soil and water, agriculture, infrastructure, energy security and financial security, posing significant risks to the global and Australian economy. Our region will face more and more intense extremes in the future, even with rapid and deep cuts in greenhouse gas emissions (Australian Research Council 2022).

The Australian Building Codes Board develops the National Construction Code, which includes the Building Code of Australia. This document sets standards and performance pathways to address the different elements and risks within buildings. Currently, it includes only cyclonic conditions and flooding, referencing Australian Standards for the construction of buildings in bushfire-prone areas and structural design actions for earthquake effects in Australia. The National Construction Code also includes requirements for earthquake and bushfire shelters. Additionally, they have a range of guidance documents on landslides and flooding. Governments across the country also provide policy and guidance material for various hazards to guide homeowners on specific hazards and what can be done to increase their resilience through good design principles and choice of building materials.

This diverse application of standards for construction also means that there is disparity in mitigation against damage, loss and social impacts for communities across the country. Consistency, where possible nationwide, would assist with mitigating natural hazards.

Standards have also been created in isolation of other hazards. A past CSIRO study found that “current design standards for buildings and infrastructure focus on individual structures subjected to extreme events of a specific hazard, e.g. AS/NZS 1170.2:2011 for wind actions and AS/NZS 1170.4–2007 for earthquake actions. Its fails to consider adequately the actions of multiple hazards, neglects the interconnectedness and interdependencies of structures and infrastructure systems, and leaves out post-disaster response and recovery;” (Resilience & Robustness, CSIRO Ecosystems Science).

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According to a recent report from NSW Treasury, the expected total economic costs of disasters (which include direct costs) for NSW are projected to increase to between \$31.8 billion and \$33.3 billion per year by 2071, up from \$8.8 billion estimated for 2021. Exposure of existing building stock to natural hazards and of new building stock being built in areas with existing natural hazard exposure is the main driver of these costs, specifically:

- Existing building stock – 65 per cent associated with flood and 48 per cent associated with bushfires.
- New building stock – 32 per cent associated with flood and 28 per cent associated with bushfire.

In 2023, the Insurance Council of Australia published a report with the Centre for International Economics (CIE), which identified that extreme weather will cost homeowners insurance double by 2050 due to an increase in the frequency and severity of natural hazards due to climate change. It also identified that if buildings were made to be more resilient to just three natural hazards through the National Construction Code, it would save \$4 billion every year. This equates to approximately \$2 billion per year for cyclones, \$1.475 billion per year for floods and \$486 million per year for bushfires.

This highlights the need for the consideration of multi-hazards and the legislated need for standards to address them. This can be for new builds, renovations and rebuilding efforts to help withstand the extreme weather expected in the future.

To understand the EOI, it would be beneficial to look at the requirements of different natural hazards in the following documents:

- [The Australian Building Codes Board National Construction Code – Building Code of Australia – Volumes 1 and 2](#)
- [The Australian Standard 3959: Construction of Buildings in Bushfire Prone Land](#)
- [Australian Standards 1530.8.1 Methods for testing building elements – radiant heat and small flaming sources](#)
- [Australian Standard 1530.8.2 Methods for testing building elements – large flaming elements](#)
- [NASH - Standard for Steel Framed Construction in Bushfire Areas 2021](#)
- [ABCB Flood Guidance](#)
- [Landslide Guidance](#)
- [Australian Standards 1170.2:2011 for wind actions](#)
- [Australian Standards 1170.4–2007 for earthquake actions](#)
- [Cyclone Resilient Building Guidance for Queensland Homes](#)
- [NSW State Disaster Mitigation Plan](#)
- [Fortis House](#)
- [Suncorp One House](#)

## Project description

This project aims to review current building standards and guidance in relation to multi-hazards across Australia, with a particular focus on NSW. The project aims to analyse existing building requirements and building guidelines for bushfire, flood, coastal erosion, inundation, sea level rise, heatwaves, tsunami, storm, landslide, cyclones, earthquakes, drought and tornadoes across Australia. The project will also consider national and international best practice standards for building and construction to address multiple hazards and identify gaps and opportunities for improvement.

To achieve this, the project will:

- analyse whether current standards should be expanded beyond existing application, (e.g. extending cyclonic controls further south or bushfire controls beyond 100m from mapped vegetation)
- analyse necessary building elements required under different hazard conditions.
- Identify best practice building standards, materials\* and designs applicable across different jurisdictions
- analyse how the building elements and systems of those elements work together for different hazards
- analyse testing methods of building elements for structural integrity under multi-hazard conditions and ensure potential reoccupation after an event.
- investigate the impact of exceeding test limits, comparing catastrophic failures with gradual failure (or fail-safe design)

\* In relation to the materials, the details required by the project would be for:

- i. what hazard
- ii. what type
- iii. what purpose

For example, flood hazard steel cladding could be used as an external wall material. Another example could be the use of 12mm structural grade plywood as floor lining for the same hazard, as well as fibrous cement sheeting used as an internal wall lining.

## Expected outputs

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

### Core outputs

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- A project plan codesigned with the Project Management Committee (PMC) with milestones and expected timeframes.
  - Project report(s) covering the following desired outputs that are relevant for industry practitioners:
    - Literature review and gap analysis of existing building requirements, guidance and standards across a range of jurisdictions (nationally & internationally) spanning a range of natural hazards.
    - Three case studies of multi-hazard exposure in buildings (to be determine with the supporting organisations) (e.g. cyclone & heatwave, storm & flood, fire & flood).
    - Cost benefit analysis/economic comparison outlining costs associated with different mitigation measures for a multi-hazard approach.
    - Multi-hazard building guidelines.
    - Best practice methods or process review roadmap that outlines pathways to implement and improve standards of multi-hazard building resilience.
  - A final report suitable for use by government executive staff, practitioners and industry personnel summarising case studies, observations for improvement, consideration of economic comparisons, guideline and/or roadmap policy summaries, in addition to identifying future research opportunities. Stakeholder presentation/s and webinars.
  - At least two peer-reviewed academic publications in high-ranking international journals. Please detail other innovative outputs that your team can deliver to address the outcomes below.
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### Additional outputs

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- 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 an opportunity to look at multi-hazards, how they are addressed through the building system and to identify gaps. It is expected that a thorough review of existing arrangements and identification of gaps will help to build a case for best practice building outcomes, elements and testing.

It is expected that the outcomes of this project will:

- Produce a best practice approach to building and construction methods to mitigate risk for a broad range of natural hazards.
- Identify suitable, cost-effective building elements, design and standards to implement to improve building resilience.
- Recommend pathways to implement more robust building requirements, standards and guidance across Australia for greater resilience to multiple hazards.
- Recommend incentives to increase resilience outcomes in existing and new building stock.
- Identify building elements that are critical to structural integrity for buildings exposed to different natural hazards and the application to structures prone to multiple hazards.
- Identify testing methods required for products to ensure structural integrity.
- Assess the appetite and any barriers for the proposed changes to be implemented through building standards.

The research is intended to have a wider impact on:

- Improved, cohesive approach that could be implemented across multiple Australian jurisdictions to embed natural hazard mitigation measures into building standards, codes and guidance.
  - Compliment the concurrent work program being undertaken for land-use planning to develop more resilient buildings and communities.
  - A review of existing arrangements should identify gaps that could be addressed to improve best practice building outcomes, elements and testing.
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## 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

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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

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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

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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.

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# 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

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<b>3 April 2025</b>	Call for EOIs opens
<b>14 April 2025</b>	Online project briefing
<b>16 May 2025</b>	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.

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## Frequently asked questions

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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

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An online webinar scheduled for **1:00pm AEST on 14 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

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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
<b>Research capability:</b> the capacity and capability to deliver an excellent research project in an Australian environment	25
<b>Project approach:</b> 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
<b>Project outcomes and outputs:</b> demonstrate a high-level understanding of the intentions of the project and how outputs/outcomes translate to practice	20
<b>Industry engagement:</b> 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
<b>Value for money:</b> delivery of required outcome within available budget along with the ability to leverage the funds provided with in-kind contributions or supplementary opportunities	20

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