Please note: the substantive content of the 2026 NRI Roadmap Survey begins at Question 20 (with prior questions dealing with administrative and other information).

As such all submissions that are published include the responses submitted from Question 20 onwards only.

Q20.

Part 2: Research themes

2.1 NRI comprises the assets, facilities and associated expertise to support leading-edge research and innovation in Australia and is accessible to publicly and privately funded users across Australia and internationally. We are seeking your input on possible directions for future national-level investment - i.e., where the requirements are of such scale and importance that national-level collaboration and coordination are essential.

The 2021 Roadmap used a challenge framework to support NRI planning and investment. With this in mind, consider likely future research trends in the next 5 - 10 years, and with respect to one or more of the 8 challenge areas identified in the 2021 Roadmap as listed below:

- describe emerging research directions and the associated critical research infrastructure requirements that are either not currently available at all, or not at sufficient scale and
- describe current national infrastructure requirements that you anticipate will no longer fit the definition of NRI in 5-10 years.

Do not limit your commentary to NCRIS funded capabilities.

Q21.

Resources Technology and Critical Minerals Processing

Q22.

Food and Beverage

Q23.
Medical Products

Q24.
Defence

Q25.
Recycling and Clean Energy

Q26.
Space

Q27.
Environment and Climate

Q28.
Frontier Technologies and Modern Manufacturing

Q29.

2.2 The 2024 statement of National Science and Research Priorities (NSRPs) includes outcomes linked to each priority to assist in identifying critical research needed in the next 5 to 10 years.
Consider the priority statements and, with respect to one or more of the 5 priority areas as listed below:

- describe emerging research directions and the associated critical research infrastructure requirements that are either not currently available at all, or
- not at sufficient scale and describe current national infrastructure requirements that you anticipate will no longer fit the definition of NRI in 5-10 years.

Do not limit your commentary to NCRIS funded capabilities, and where relevant, refer to the underpinning outcomes and research identified in the NSRPs document.

Q30.

Transitioning to a net zero future

Q31.

Supporting healthy and thriving communities

Q32.

Elevating Aboriginal and Torres Strait Islanders knowledge systems

Q33.

Protecting and restoring Australia’s environment

Q34.

Building a secure and resilient nation

The Women in Mathematics Special Interest Group (WIMSIG) of the Australian Mathematical Society advocates a national research institute in mathematics as critical infrastructure for building a secure and resilient nation. Mathematics is a fundamental discipline which underpins all theoretical and applied sciences. However, Australia's internationally-recognised excellence in mathematical research is threatened by a lack of continuous and robust government support. Sustained investment in mathematics will have a multiplier effect on Australia's overall research capacity, enhance our global competitiveness and create high-skilled jobs. Investment in Australia's mathematics infrastructure now is essential for the nation to be secure and resilient going forward. The current-day applications of mathematics range across all areas of science and technology, and to be ready for future applications we need to invest in the mathematical foundations now. Sovereign capability in mathematics is critical for Australia to confront challenges ranging from robust AI and cybersecurity to defence, climate change, prediction and prevention of bushfires, and the next pandemic. Advances in highly theoretical pure mathematics underpin AI, cryptography and data encryption, while mathematical optimisation and modelling support the resilience of critical infrastructure from energy grids to financial markets. In the environmental and health sectors, mathematics enables rigorous data analysis, without which we cannot meet the challenges of the future. We strongly recommend that the NRI include mathematics research infrastructure as a critical component of National Research Infrastructure within the roadmap.

Q35.

2.3 The case for a new NRI capability, or enhancements to existing capabilities, typically emerges through advocacy from research communities clustering around rigorously identified needs and goals. Such a concept could respond to a requirement for novel or expanded capacity within a domain, or across domains, and must be such that it could only be made available with national-level investment.

If you have identified such a requirement, briefly describe the need, the proposed infrastructure capability, the medium-term goals, impacted research communities, and the timeframe over which you advocate its establishment. Your response can include links to relevant existing reports.

Identified need: Investment in research infrastructure is essential for all areas of science, including mathematics. The most effective infrastructure for developing mathematical expertise, solving critical problems and building collaborative networks is a national residential research institute for mathematics. This aligns with the NCRIS objective of strengthening Australia's research capabilities. Proposed Infrastructure – A Residential National Research Institute for Mathematics Research in mathematics primarily relies upon deep collaborative interactions, which are most effectively carried out in person. Unlike many other sciences, mathematics does not require large and expensive pieces of equipment. Globally, residential research institutes are recognised as crucial components of the research ecosystem in mathematics. The Isaac Newton Institute for Mathematical Sciences in the UK, founded 1992, is a prime example. In the US, the Simons Laufer Mathematical Sciences Institute (SLMath, founded 1982) and the Institute for Pure and Applied Mathematics (IPAM, founded 2000) are renowned for their contributions to advancing mathematical research. Canada has the Banff International Research Station for Mathematical Innovation and Discovery (BIRS, founded 2003), and the New Zealand Mathematics Research Institute was founded in 1995. In Australia's region, many well-funded mathematical research institutes have been established in recent years. China opened the Shanghai Institute for Mathematics and Interdisciplinary Sciences in early 2024, and the Beijing Institute of Mathematical Sciences and Applications was founded in 2021. Despite the essential foundational role of mathematics, dedicated government funding to support research infrastructure for mathematics in Australia remains absent. The urgent need for a sustainably-funded national institute for mathematics in Australia is identified in the Decadal Plan for the Mathematical Sciences (2016-2025) and reinforced by ATSE's Pre-Budget Submission 2025-6. WIMSIG highlights that a residential research institute in Australia has a key role to play in addressing the under-representation of women in mathematics. The programs of such an institute bring world-leading experts to Australia for deep collaborations. This is critically important to Australian researchers with caregiving responsibilities, who often cannot travel internationally, and so miss out on opportunities to participate in programs at overseas research institutes. Since women are more likely to be caregivers of both children and elderly parents, such restrictions on overseas travel are a long-term challenge for many women in mathematics. Further, for those women who are caring for children, residential institutes can and do support full participation in programs by providing on-site childcare. Repairing the leaky pipeline of women in mathematics requires robust support for students and early-career researchers. A national research institute is a key facilitator of career-building mentoring and collaboration between established researchers and those who are starting out. This includes activities targeted at women in mathematics, such as the "Connections for Women" program which runs at the start of every semester at SLMath in the US, or collaborative workshops like "Women in Operator Algebras" at BIRS in Canada. The visibility of a national research institute with women actively involved in its strategic initiatives also encourages female school students to continue to engage in STEM disciplines. To build a secure and resilient Australia, we need to invest in the talents of our entire population. Timeframe Timeframe Dedicated funding for a national research institute in mathematics should commence in 2026. Australia is already far behind the rest of the world in this kind of investment and our security and resilience depend on catching up.

Q36.

Part 3: Industry perspectives

This section is seeking input specifically from industry-based respondents. Other respondents can skip this section.

Recommendation 6 of the 2021 Roadmap related to improvements in industry engagement with NRI. To complement work on this topic that has occurred since then, we are seeking additional advice on NRI requirements as perceived by current or potential industry-based users.

Q37.

3.1 Have you (or your organisation) interreacted with or used Australia's NRI?

- ◯ Yes
- ◯ No

Q38.
3.2 If so, please briefly outline the NRI capabilities you (or your organisation) have interacted with or used. Do not limit your response to NCRIS capabilities.

This question was not displayed to the respondent.

Q39.
3.3 Please indicate your (one or more) primary reasons for interacting with NRI:

This question was not displayed to the respondent.

Q40.
3.4 If you answered no, please indicate your (one or more) primary reasons:

This question was not displayed to the respondent.

Q41.

Part 4: Other comments

4.1 Please elaborate on any of your above responses or add any other comments relevant to the development of the 2026 Roadmap. Your response can include reference or links to existing reports that you recommend be considered during the 2026 Roadmap development process.

WIMSIG welcomes further engagement in the roadmap process and is keen to contribute expertise from the community of women in mathematics to help shape a forward-thinking, impactful NRI strategy. We recommend the NRI advisory group consider the following reports, which highlight the national need for investment in mathematics and expose the current funding gap in this critical field in Australia: - Decadal Plan for the Mathematical Sciences (2016–2025) – Australian Academy of Science and the Australian Mathematical Sciences Institute: https://www.science.org.au/support/analysis/decadal-plans-science/decadal-plan-mathematical-sciences-australia-2016-2025 - ATSE 2025-26 Pre-budget Submission (Jan 2025): https://www.atse.org.au/media/ipioffw0/atse-sub-250129-pre-budget-submission-v3.pdf - AMSI-MATRIX Report on Research Investment and Expenditure (May 2024): https://amsi.org.au/wp-content/uploads/2024/05/amsi-matrix-research-funding-report-may-2024.pdf - Call to Action Based on AMSI-MATRIX Findings (August 2024): https://www.matrix-inst.org.au/call-to-action/ The Strategic Examination of R&D discussion paper, Department of Industry, Science and Resources, 2025, underscores that Australian still invests very little in fundamental R&D: https://consult.industry.gov.au/strategic-examination-rd-discussion-paper

Q49.
4.2 Optional Document Attachment.
Note: Our strong preference is that answers are provided against the relevant questions in the survey. However, this file upload option is available for submissions in file format, where needed. Please ensure the document includes your name or organisation.