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

The Critical Gap in NCRIS Funding for Optical Microscopy Optical microscopy is the cornerstone of biological research, essential for both fundamental studies of living systems and the validation of clinically relevant treatments. Despite its crucial role, it remains absent from NCRIS funding. High-quality research-grade optical microscopes are prohibitively expensive: widefield microscopes cost around $400,000, confocal systems range between $800,000 and $2 million, and state-of-the-art minFLUX systems approach $5 million. Currently, there are no dedicated government funding mechanisms to support research institutions in acquiring these essential tools on a sustainable basis. Researchers are left to seek philanthropic funding, which is both rare and often unsuitable for core research infrastructure. The only other option, LIEF grants, is wholly inadequate given the rising cost of equipment and the need to split funds across multiple institutions. Modern research facilities typically house 20 or more microscopes, with a total value of $10–$20 million and a lifespan of around 10 years. To maintain global competitiveness, each optical microscopy facility needs at least $1–2 million per year in dedicated funding for the replacement of essential microscopy systems, plus additional resources for acquiring cutting-edge technologies. Beyond funding for equipment, staffing remains critically underfunded. Reviews by German BioImaging and the Royal Microscopy Society indicate that a facility with 20 microscopes requires 6–9 staff to function optimally. However, the Australian average is just two staff per facility. The increasing complexity of modern microscopy—especially in handling big data, high-performance computing, and advanced imaging analysis—further strains already overstretched personnel. Without dedicated funding for expert staff across these areas, research infrastructure in Australia will continue to lag behind international standards. To sustain excellence in biological research, we urgently need ongoing, structured funding to support both equipment renewal and the skilled personnel required to maximize its impact.

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

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.

Microscopy underpins broad science disciplines, from medical, soft matter, plant, materials, agricultural and geological sciences, that require cutting-edge microscopy to address Australia's future research and industry needs. A significant uplift in advanced optical microscopy is urgently required across the country. The continuation of long-term investment (10+ years) in national research infrastructure, such as Microscopy Australia, is critical. A long-term, ongoing timeframe would ensure continuous high-level support for all Australian researchers from emerging early career researchers through to those in national flagship research programs, such as MRFFs, CRCs, ARC Centres of Excellence and Laureates, and NHMRC Investigator Fellowships. Interruption or stagnation of funding would have critical consequences for Australia's future.

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:

- [ ] I did not know about it
- [ ] Other facilities suit my needs better
- [ ] I would like to, but cannot get access due to geographical location
- [ ] I would like to, but believed that access was only available to academic researchers
- [ ] I am not aware of any capability that meets my needs
- [x] Other (please specify) Optical microscopy isn't supported by NCRIS, as opposed to Electron Microscopy which is through Microscopy Australia. This needs to change urgently

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.