

**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**

Expansion of NRI is needed to enable growth of applied research to support the defence sector, especially in research areas related to naval and maritime applications. This requires coordination of national facilities with new infrastructure to support R&D required for technology development (e.g., related to military vessels, autonomous surface and underwater vehicles, submarines). While some individual facilities exist that are distributed across some institutions, these are not managed nationally in a coordinated way nor at an adequate scale to support the defence sector and linked industries.

Q25.  
**Recycling and Clean Energy**

Q26.  
**Space**

Q27.  
**Environment and Climate**

Australia is fortunate to have excellent NRI that support ocean observations via IMOS but historically its coverage in coastal and nearshore regions around Australia (i.e., at land-sea interface) has been relatively limited and has also not been covered by other NCRIS facilities. This coastal region is also where there is significant demand from diverse end users (industry, government, and public) and engagement with a wide range of stakeholders. These gaps have been well-recognized nationally across many forums, which has led to progress towards the collaborative CoastRI planning process that will help to address these gaps. The rollout of CoastRI will be a very positive development for Australia.

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

Research infrastructure to support energy transition in the offshore industry from oil and gas is not available at a scale required to support development and commercialization of new energy sources (e.g., related to marine renewables such as offshore wind, wave and tidal power, hydrogen, etc.). Australia has the foundation to deliver significant innovation related to offshore renewables (leveraging its strong offshore R&D capabilities) but there is not the necessary NRI to support this. As a result, emerging industries (SMEs) rely on using overseas testing facilities (especially in Europe) that subsidises technology development and has led many successful SMEs to relocate overseas where their R&D activities are supported.

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.

**\*\* Need for a new nationally-coordinated NRI capability to support research and industry needs in ocean engineering and technology \*\*** Australia requires a coordinated national collaborative research infrastructure in ocean engineering and technology to address critical challenges related to coastal resilience, renewable offshore energy developments, sustainable marine infrastructure, climate adaptation, maritime trade and shipping, and national defence. These areas collectively support Australia's blue economy by fostering economic growth, technological innovation, and environmental sustainability. The absence of integrated, nationally-accessible research infrastructure limits Australia's capacity to advance research, innovation, and industry development. Key sectors benefiting from this infrastructure include coastal and offshore engineering, renewable energy (wave, tidal, floating wind), maritime transportation, aquaculture, coastal protection, disaster risk reduction, and climate change adaptation. Currently, ocean engineering and technology research infrastructure is not covered under the NCRIS. While NCRIS supports ocean observing capabilities through the Integrated Marine Observing System (IMOS), IMOS focuses primarily on marine environmental monitoring rather than experimental and engineering research. A dedicated ocean engineering and technology infrastructure would complement IMOS by providing the necessary experimental, computational, and testing facilities to develop innovative solutions for offshore and coastal industries.

**\*\* Types of Research Infrastructure Needed \*\*** Essential infrastructure elements should include:

- Large-scale physical modelling facilities (wave basins, wave flumes, current and sediment transport channels, geotechnical centrifuges, etc).
- High-performance computational facilities and data management platforms for digital twin and numerical modelling applications.
- Dedicated research and industry collaboration hubs facilitating knowledge exchange and innovation partnerships.
- Facilities supporting ocean technology development, including sensor development and testing, underwater acoustics, and marine robotics. This would provide a critical platform for advancing ocean monitoring technologies, improving maritime operations, and supporting defence applications.

**\*\* Current State of Relevant Research Infrastructure \*\*** Australia currently has valuable but dispersed ocean engineering and technology research facilities. University-based hydraulics laboratories, such as those at the University of Western Australia (UWA), University of New South Wales (UNSW), University of Queensland (UQ), Australian Maritime College at the University of Tasmania (UTas-AMC), and the University of Melbourne (UniMel), provide foundational capacity in physical modelling. Additionally, government facilities including the Queensland Government Hydraulics Laboratory and Manly Hydraulics Laboratory offer significant capabilities. However, while a collaborative network of facilities exists, there is no national strategy to bring these capabilities together in a coordinated manner. This lack of integration results in underutilized capacity and limited broader accessibility. These existing capabilities and collaborative network that exists provides an excellent foundation for new NCRIS capability that could be efficiently established and rolled out nationally.

**\*\* International Examples of Coordinated Programs \*\*** International examples demonstrate the effectiveness of collaborative, coordinated infrastructure programs to support R&D relevant to the blue economy. Notable examples have included:

- HYDRALAB (Europe): Offers transnational access to world-class hydraulic facilities, enabling collaboration and advancement in hydraulic and coastal engineering research.
- MARINET and MARINET2 (Europe): Facilitates research and industry access to wave and tidal energy test facilities, accelerating renewable energy technology development.
- U.S. National Science Foundation's Natural Hazards Engineering Research Infrastructure (NHERI): Provides researchers and industry with shared facilities, including wave basins and flumes, to address natural hazards and infrastructure resilience. In the international landscape, this also disadvantages Australia, as researchers and industry stakeholders in other countries can leverage well-coordinated infrastructure programs to accelerate innovation and commercialization. Some of these schemes have also provided access to users worldwide, which has led companies (including in Australia) to leverage this support and, in some cases, relocate overseas to take advantage of R&D support offered abroad.

**\*\* Anticipated Benefits for Australia \*\*** Establishing this capability would:

- Help position Australia as a global leader in ocean engineering and technology development.
- Accelerate innovative solutions addressing climate adaptation, coastal resilience, protection of Australia's critical coastal infrastructure, and sustainable coastal development.
- Drive industry growth and economic diversification by supporting the establishment of new and emerging ocean industries that can leverage Australia's strong offshore expertise in the traditional resource sector, including sustainable maritime sectors and offshore renewable energy.
- Leverage both industry and research sector investment to build a critical mass of world-leading research infrastructure capabilities.
- Support education and workforce development through accessible world-class facilities and collaborative opportunities.
- Enable growth in R&D related to defence, which is expected to expand substantially through initiatives such as AUKUS, by providing critical testing and development infrastructure for next-generation naval and maritime defence technologies.

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.

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Q39.

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

☐ For expertise or advice

☒ Access to research resources or products

☒ Access to equipment for research

☐ Access to equipment for operational reasons

☐ Help in translating research

☒ Access to data

☐ Support for clinical trials

☐ Other (please specify)

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.

