SCIENCE & TECHNOLOGY AUSTRALIA POLICY SUBMISSION

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2026 NATIONAL RESEARCH INFRASTRUCTURE ROADMAP

Science & Technology Australia thanks the National Research Infrastructure Advisory Group for the opportunity to respond to the 2026 National Research Infrastructure Roadmap Issues Paper.

We look forward to engaging in more detail on specific details, including on the exposure draft when available, and would be happy to convene sector conversations and provide detailed additional expert advice as requested.

Science & Technology Australia is the peak body for the nation's science and technology sectors, representing nearly 150 member organisations and more than 235,000 scientists, engineers, technologists and STEM educators. We connect science and technology with governments, business and the community to advance science's role in solving some of humanity's greatest challenges.

Key points

- The 2026 National Research Infrastructure Roadmap (the Roadmap) must acknowledge the funding pressures across the research sector and make a highly compelling case for a significant uplift, especially from 1 July 2029, to ensure long-term, sustainable research infrastructure (RI) funding.
- The Roadmap must deliver a robust, cohesive map of the nationally significant research infrastructure needed to deliver Australia's research priorities, along with a framework for prioritising short- and medium-term national research infrastructure until additional, long-term funding can be secured.
- The Roadmap must make a clear delineation between RI-specific challenges and needs and issues that are research-sector wide – and not seek to remedy sector-wide issues through RI grant funding streams.
- Properly supporting translational research and industry access to NRI requires developing an industry-focussed infrastructure initiative that would better serve industry needs – but this must not come at the expense of supporting existing RI.
- NRI should also not be held to account nor overly monitored on the translational impact of research, as this is ultimately dictated by the researchers and industry using their instrumentation and capabilities.

Current context and state of the sector

Australia's research sector is under strain. Funding sources are constrained, direct and indirect costs are increasing quickly (outpacing indexation applied to grants), sector morale is low, success rates for research grants are low and decreasing, and there is significant uncertainty posed by a myriad of Government reviews currently underway. These include the Strategic Examination of R&D (SERD), the new Health and Medical Research Strategy (NHMRS), changes to the Australian Research

Councils National Competitive Grants Program, the reshaping of university practice through the new Australian Tertiary Education Commission.

Australia's publicly funded research agencies (PFRAs), which are responsible for significant research infrastructure (RI) assets and facilities are operating under stagnant or reduced budgets, despite increased operational costs. The National Collaborative Research Infrastructure Strategy (NCRIS), Australia's flagship grant scheme for supporting national research infrastructure (NRI), is facing an existential funding cliff at the end of the forward estimates, i.e. 1 July 2029, when the 11-year, $185.9 million funding boost delivered in the 2017–18 Federal Budget to implement the 2018 Research Infrastructure Investment Plan comes to an end. The sector has seen no indication of how this enormous funding cliff will be managed. Compounding this, Australia's universities are also facing budget pressures, posing challenges in supporting research and institutional RI.

Amid this highly constrained budget context, it is imperative that the 2026 NRI Roadmap works in concert with the SERD, NHMRS and other processes to deliver the transformative reform the sector needs. This must include a compelling call to continue the NCRIS funding uplift, an uplift in the Medical Research Future Fund's (MRFF) disbursements to support research infrastructure and a considered and sustainable approach to managing PFRA-hosted RI.

This Roadmap will be critical to build the case for this additional funding. At the very least, it must deliver a robust, nationally cohesive map of the nationally significant RI needed to deliver Australia's research priorities, along with a framework for prioritising short- and medium-term NRI until additional, long-term funding can be secured.

Clarity of scope and output/outcome

Many discussions of Australia's RI – and indeed the Issues Paper itself – tend to conflate research sector/system issues with RI issues. While these boundaries can be blurry, it's important the Roadmap retains a clear focus on RI and does not seek to solve sector-wide issues through RI funding streams or policy solutions. For example, researcher training needs, research governance issues or core resourcing needs for important, and often national, institutions should not be a focus of the Roadmap, nor funded through NRI. While these are important, they must be addressed separately.

It is also important that the Roadmap maintains a clear delineation between national-level RI and does not stray into the realm of institutional-level RI, even when the infrastructure is needed nation-wide. In the currently strained fiscal environment, there must be a clear process for assessing priorities and allocating funds to nationally significant, collaborative and accessible RI, lest the limited available funding become diluted in an attempt to spread funding as widely as possible.

The Roadmap must also clearly identify the capabilities the system needs, assess how the current landscape meets these needs and where there are any gaps. This will require a holistic approach that accounts for Australia's entire NRI landscape, spanning – and being supported by – the RI managed through PFRAs, other government agencies and NCRIS. The Roadmap must also not simply become a de-facto planning document for NCRIS alone. Ideally, it will include a comprehensive list/map of current NRI and identify currently unmet and emerging areas of NRI capability/functional needs.

The Roadmap must also clearly articulate the nuance, rationale and value of Australia's different RI management mechanisms. It must note the critical importance of NCRIS' collaborative nature in convening sector-wide NRI, and the strategic approach that reduces fragmentation and duplication across the system.

The Roadmap must strike a considered balance between strategic needs and granularity, informed by deep consultation with current RI providers and sector experts. To properly plan for long-term security for Australia's NRI, the Roadmap must identify capabilities at the appropriate scale to enable realistic costings and implementation pathways. True operational costs must be recognised and funded appropriately. For too long, Australia's RI system has lurched from crisis to crisis, with

short-term, stop-gap funding options being the norm. This Roadmap must set the scene for a long-term sustainable NRI sector.

Industry needs dedicated focus

There is a strong need to deepen business investment in R&D in Australia, and this has been a strong focus for the SERD, which was delivered to Government in December 2025.

For decades, NRI has provided foundations across the technology readiness levels (TRLs), from enabling curiosity-driven research through to developing new drugs, supporting safe ocean shipping, enhancing climate modelling for agriculture, building population health insights to new medical device prototypes, and many other discoveries and applications.

While there is certainly scope and need for NRI to service industry research, a more transformative option would be to develop specific translational infrastructure to support industry work, at higher TRL levels. An example would be a collaborative network of prototyping facilities to support early-stage start-ups and industry development. This should be supported through a new dedicated funding stream or National Reconstruction Fund (NRF) allocation rather than through NCRIS or existing PFRA infrastructure funding.

One such translational infrastructure would be a national-scale prototyping and manufacturing capability. This would help early-stage start-ups seeking to translate innovative research into new products that could then underpin new industries, to develop prototypes, translate test product viability, trial designs and optimise manufacturing procedures.

This could be delivered through a collaborative network of prototyping facilities, distributed across the country. These would deliver support for early-stage development and manufacturing scale-up across a broad spectrum of disciplines and industries, including engineering, agriculture, and health and medical drug and therapy development. Adopting the proven collaborative NCRIS funding model, the Government would deliver funding for such facilities through a non-competitive grant process that would also leverage funding contributions from state and/or territory government and potentially business. Businesses would be able to access the facilities at low to no-cost, potentially though a voucher system or through another means of merit-based allocations.

Spanning the ‘valley of death’ stages of TRLs 4–7, the network would deliver crucial government support essential to de-risking the proof-of-concept and early scale-up stage of product development. This would enable development of products in which industry can invest with greater confidence. The facilities would need to have ISO accreditation and could become advanced manufacturing hubs that serve both Australia and the broader Indo–Pacific region. This would position Australia as a key leader and partner in value-added manufacturing technologies.

Delivering this essential early-stage support to start-ups and other businesses would help address Australia’s challenge of ‘the missing middle’ and support the nation’s advanced manufacturing capability. It would help keep more Australian ideas onshore and provide valuable fodder for NRF investment and support the Future Made in Australia (FMiA) agenda.

Response to Issues Paper questions

Q1. Should the proposed definition of NRI in the 2026 NRI Roadmap be modified – such as by elaborating what is meant by ‘nationally significant’, or by other changes? If ‘yes’, please contribute a potential definition (or definitions).

In refining the definition:

- It must be acknowledged that NRI cannot deliver value for government investments without the highly trained personnel integral to their effective operations, and they are part of – not separate to – each and every RI.

- We should move away from the artificial distinctions of national, landmark and global, as these are issues of geography and cost scale, not national need.
- It is important to keep the definition as clear and concise as possible.

Proposed wording for NRI definition:

> NRI is the nationally significant assets, facilities and services – including the highly skilled personnel that operate them – needed to support leading-edge Australian research and innovation and areas of Australian globally-competitive research strength. It is accessible to publicly and privately funded users across Australia and may be single-sited, virtual, distributed or offered to Australia by other jurisdictions to optimise the use of resources to create scale, reduce duplication and increase nationally significant, priority and collaborative research.

Aboriginal and Torres Strait Islander knowledge systems

Q2. What should be done, and over what timeframe, to ensure future NRI investments respect cultural protocols, support self-determination, and promote benefit sharing, in line with the Australian Government's Framework for Governance of Indigenous Data?

This is a major area for focus and improvement in the research community; we as a community must do better in Indigenous research and in collaborations with Indigenous people and communities. However, the vast majority of 'investments' and actions needed are to do with the way research is undertaken, supported and funded, and not NRI per se.

For example, implementation of new data standards, while ethical frameworks for managing data with Indigenous data sovereignty considerations and consent are certainly areas that NRI must engage with, they are a research sector-side consideration, with responsibility lying also with researchers and institutions not NRI.

Equally, the research community and institutions should deliver training to their staff and members on CARE/FAIR and in cultural competency as a standard institutional professional development responsibility – this is not a function for NRI to deliver, nor fund.

However, given that financial levers and sanctions are often the most successful in changing culture, including in the research system, contractual and grant agreements are a way to drive positive change and uplift.

Grant and funding contracts could include a requirement for entities managing NRI to use and implement CARE/FAIR practices, with periodic audits to ensure compliance. Entities would also be required to ensure all researchers have undertaken training in and uphold set CARE/FAIR standards, with future access for researchers and their host institutions potentially terminated or sanctioned if these standards are not upheld.

There is a clear case for NRI to support Indigenous health data assets, including biobanks and digital infrastructure, that protect Indigenous cultural knowledge and intellectual property that ensure Indigenous-control and sound governance protocols and process.

Contractual arrangements (or ministerial expectations for PFRAs) could require NRI entities to have governance structures that include First Nations representatives on Boards, or dedicated First Nations advisory committees, where they don't already exist.

Research infrastructure workforce

Q7. What are the critical skills that the NRI workforce should have regardless of their technical expertise?

The NRI workforce is not a uniform, homogenous collection of workers. As with any research facility – indeed any organisation – a range of skills and expertise are required to ensure the organisation operates successfully. Depending on the size of the organisation these are executed by various staff, sometimes as part of a combined role. The 'soft skills' required to effectively run NRI are no different to those required across any other workforce – i.e. strong skills in effective communication, governance, financial management, evaluation and impact monitoring, strategic planning and stakeholder engagement (including government relations, member management and industry engagement).

Executive and managerial staff must be equipped with the skills to oversee both the strategic and operational needs of complex organisations, orchestrate complex governance arrangements, navigate government policy settings (including across diverse state and federal portfolios), as well as liaise effectively with the academic, government and industry sectors.

The operational staff for NRI extend from administrative support roles to deeply technical niche roles that are challenging to fill. These technical staff must also have the agility and adaptability to accommodate the needs of different NRI users, spanning academia, government and industry.

Q8. What is the best approach to retain staff and to add new capabilities to the current NRI workforce?

While STA welcomes a focus on workforce by the NRIAG, we caution the Roadmap document and process focussing too much on workforce, as workforce issues can largely be addressed through NRI funding mechanisms. The greatest benefit would be for the NRIAG to focus on separate advice to Government on funding allocations for PFRA allocations and various grant schemes (i.e. NCRIS, LEIF and MRFF) and appropriate grant requirements that incentivise and enable sustainable workforce planning and employment structures, that are agnostic of the employing entity.

The primary issue with the NRI workforce is the challenge in recruiting and retaining uniquely skilled staff in a system that is fundamentally underfunded, which can lead to a lack of job certainty and security and competitiveness of salaries to industry, and can lack the operational control to establish appropriate pay and conditions to provide stepped career progression for skilled technical staff to. The challenge primarily lies in filling the deeply specialised, technical roles that are essential to most NRI operations. These roles are often highly niche, with limited numbers of qualified people to be found globally, let alone domestically in Australia. For NRI hosted at universities, it can also be challenging to account for this specialised skillset within standard university staffing categories – which generally only include academic or professional (administrative and technical support) streams. As NRI staff generally are categorised as professional staff, and salary levels in the stream are simply insufficient to offer a competitive market rate needed to recruit and retain staff.

Appropriate budget and time for continuous professional development should be allowed for all NRI staff to ensure they retain – and upgrade – their highly specialised skill sets and to ensure they remain reliable, expert advisors for industry and researchers.

Current visa settings can also pose barriers to effective recruitment from overseas to fill highly specialised roles. Some visas' eligibility require applicants to exceed a set salary threshold, and often NRI facilities are constrained in the salary they can offer applicants. These constraints come from overall insufficient funding available to provide attractive salaries, and for university-hosted NRI, the professional staff category can pose additional challenges. The limited salaries available for professional staff are insufficient to meet some visa thresholds. Furthermore, these visa types

require sponsorship from the employing institution, and some institutions have a blanket policy of only sponsoring academic staff, not professional. Australia is missing out.

Some universities have developed a third staff classification to resolve this issue. For example, the University of Queensland has implemented a new sub-category of the academic staff stream, known as a platform academic. This classification is for staff that enable research through platform expertise, including platform maintenance and providing expert technical and scientific advice and support. However, this solution is not uniformly available across the sector. The NRIAG should explore this issue and canvass solutions that would deliver to a consistent approach for all NRI.

Additionally, the NRIAG could recommend to Government that it explore the potential for ministerial discretion to the minimum annual salary for visas for NRI staff where unique, specialised workforce skills and experience are identified as globally constrained.

Another potential way to build the NRI workforce is for institutions to develop – and fund – PhD pathways in which NRI is deeply embedded in the PhD candidate's project. This would help build the NRI workforce and provide attractive research-adjacent career pathways for PhD graduates, but is dependent on long term funding of NRI.

Regardless, the Roadmap must acknowledge these challenges, and present a strong position that all NRI planning and investments must include adequate funding that will ensure:

- competitive salaries
- job security
- professional development opportunities that are relevant and useful to staff.

Translation and industry

Q9. How can NRI facilities ensure their capabilities are made widely known and available to potential users in relevant industry sectors across Australia's cities and regions?

It is important industry is aware of, can access, and derive benefit from the services provided through Australia's NRI system. Many NRI facilities are already delivering extensive services to industry entities and supporting translational research at various TRLs.

However, it must be remembered that NRI should first and foremost support research, which is traditionally in the TRLs 1 through 4, rather than commercial development or large-scale manufacturing. These commence at TRL 5 with demonstrations that become commercially relevant, e.g. testing new batteries or sensors for autonomous vehicles in realistic or live environments or implementing a new diagnostic technique on actual patient samples or in a real clinical workflow. Industry must be able to access NRI to carry out industry relevant research.

NRI must never be seen as a service to industry that could become 'self-sufficient' through cost-recovery mechanisms. NRI is primarily accessed by start-ups or industry conducting early-stage development work – which is not yet at a commercially viable stage. In Australia, even if these businesses are a mature entity, they need to be able access the infrastructure at low or no cost to for this development work to be viable and progress along the TRL pathway. If costs are too high, they will conduct this development work overseas and the long-term opportunity – and benefits – will be lost to Australia.

NRI must be sustainably supported by Government as an essential enabler for public good research. Similarly, the government's own operations, supported through NRI, underpin essential societal needs and services. NRI use by industry is an important evolution for Australia's future and will enable scaling, but underlying support through Government funding is critical to de-risking assets for all users.

NRI capabilities, and the institutions that host them, are only as good as the awareness and use of them are identified and celebrated. Consideration should be given to:

- the adequacy of resourcing to NRI institution hosts to develop impact stories from users
- enhancing the use of persistent identifiers (PIDs) to better acknowledge and track funding, researchers, facilities and research impact, ideally through government-wide support for implementation of the Australian National PIDs Strategy
- establishment of a national audit and register of nationally significant and accessible research infrastructure.

The NCRIS-funded Research Infrastructure Connected (RIC) is an important 'single front door' for industry or other entities to access NCRIS projects, and should be extended to non-NCRIS nationally significant and accessible capabilities. This would improve capabilities' visibility and accessibility from instrumentation to datasets and capabilities to maximise usage, amplify visibility and multiply impact.

Q10. How can NRI facilities build the know-how and support that will lead to an increase in productive research-industry collaborations?

While NRI facilities can and do help enable translational activities and facilitate productive environments for research-industry collaborations to flourish, it is important to not hold research infrastructure accountable for the effectiveness and impact of researchers and university research commercialisation officers to develop industry collaborations.

NRI should also actively participate in industry PhD programs and serve as an effective conduit for connecting industry and academic groups.

Q11. To improve research translation capability, can you identify and briefly describe needed enhancements of existing NRIs, and/or new NRI?

It's important to remember that 'translational research' services and supports industry needs and the creation of new products, through to supporting and informing clinical practice and policy.

For translational research in the industry space, a major challenge for early-stage start-ups seeking to translate innovative research into new products that could then underpin new industries, is the ability to develop prototypes, translate test product viability, trial designs and optimise manufacturing procedures. To do this, businesses need access to a national-scale prototyping and manufacturing capability.

This should be delivered through a collaborative network of prototyping facilities, distributed across the country. These would deliver support for early-stage development and manufacturing scale-up across a broad spectrum of disciplines and industries, including engineering, agriculture, and health and medical drug and therapy development. Adopting the proven collaborative NCRIS funding model, the Commonwealth Government would deliver funding for such facilities through a non-competitive grant process that would also leverage funding contributions from state and/or territory government and potentially business. In some cases, these could be co-located and managed by institutions hosting NCRIS-funded NRI or the NRF-supported Advanced Manufacturing Readiness Facility in Western Sydney to maximise existing Government investment in specialised buildings and workforce. Businesses would be able to access the facilities at low to no-cost, potentially though a voucher system or through another means of merit-based allocations.

Spanning the 'valley of death' stages of TRLs 4–7, the network would deliver crucial government support essential to de-risking the proof-of-concept and early scale-up stage of product development. This would enable development of products in which industry can invest with greater confidence. The facilities would need to have ISO accreditation and could become advanced manufacturing hubs that serve both Australia and the broader Indo–Pacific region. This would position Australia as a key leader and partner in value-added manufacturing technologies.

Delivering this essential early-stage support to start-ups and other businesses would help address Australia's challenge of 'the missing middle' and support the nation's advanced manufacturing capability. It would help keep more Australian ideas onshore and provide valuable fodder for National Reconstruction Fund (NRF) investment and support the Future Made in Australia (FMiA) agenda.

While a broad range of NRI facilities funded by NCRIS could benefit from expansion to underpin emerging science and research there is no doubt that high performance compute (HPC) and associated data storage will drive ongoing Australian-led impact in most modern computationally heavy science and AI developments. This ranges from materials and drug development to climate modelling to better address and plan for extreme events.

This must be considered separate – yet foundational – to digital research infrastructure. It will be critical that the Roadmap articulates the projected scale of Tier 1 and 2 HPC Australia requires to deliver on critical research needs (modelled based on research funding levels and research priorities) and government policy needs. Further details are provided under Q14.

Past Roadmaps have taken a mixed approached to considering Australia's needs for access to global research infrastructure, including but not limited to particle physics and optical and radio astronomy. This Roadmap should be agnostic of facilities' geographical location, and purely identify the research infrastructure capabilities and functionalities Australian research needs at a national level. This must be done noting that at times it is not efficient nor even possible to construct or deliver these in Australia as a sovereign capability, and in the context of other funding considerations such as association to Horizon Europe and Australia's involvement with the European Southern Observatory.

Q12. How should research translation be planned for in the development of new NRI?

Translation should be explored and informed through both a 'discipline push' and 'industry pull'.

Disciplines should be encouraged – and resourced appropriately – to develop regular decadal plans that identify their discipline's research priorities and potential outcomes and impacts for society, industry and. These plans should identify gaps in research infrastructure and ecosystem capabilities that are critical to underpinning and enabling research.

To complement this, industry and the wider non-industry based research sector should identify translational research infrastructure critical to underpin work at higher TRLs, similar to the approach deployed by the European Commission. For this to be successful a specific industry focus would be needed through a dedicated industry stream, i.e. a 'technology infrastructure' funding scheme. However, it would be imperative that this funding stream does not cannibalise existing NRI funding – there is no merit in supporting a new technology and industry focussed initiative at the expense of discovery research support.

New research infrastructure

Q13. Review the full set of available suggestions for potential new or enhanced capabilities from the published Survey responses (Question 35) and identify up to 3 that you regard as most important to consider for inclusion in the 2026 NRI Roadmap. Please provide a brief rationale for your view and include the response number(s) for your selection.

As previously indicated, STA does not believe that it is a reasonable nor time efficient task to expect the sector to read and analysis nearly 200 pages of suggested ideas and select 3. We strongly encourage the NRIAG to, in first instance, use the scientific advisory committees of NCRIS capabilities to consider these potential infrastructure suggestions.

We look forward to the Government and NRIAG's analysis and proposed prioritisation of these as part of further consultations and the Roadmap exposure draft.

Q14. If you wish to propose an additional priority suggestion for a new or enhanced capability, that was not in the Survey responses, please name it here, and briefly describe the need, the capability, the medium-term goals, impacted research communities, and the timeframe over which its establishment should occur.Responses expressed in terms of the pros and cons of each approach would be especially useful.

HPC and data capability underpins research across all STEM disciplines. As applications deploying ever-growing datasets and artificial intelligence (AI) processes continue to expand across research fields, this need is only going to grow. HPC is also critical to several areas of Government business, with deep capability embedded in the work of several Government departments, including the Bureau of Meteorology and Geoscience Australia.

Some research requires significant compute/software capability collocated with enormous datasets. The complexity of this work means it can not be done on institutional or commercial systems (traditionally known as Tier 2 systems) and requires an NRI-scale HPC and data capability, known as Tier 1. These areas include high-resolution climate modelling, atomic-scale modelling (e.g. particle physics, drug discovery) and fluid/aerodynamics modelling.

Both Tier 1 and Tier 2 systems are required to effectively support Australia's research sector. Australia's future research capability, from astronomy to complex, multi-modal modelling in health, agriculture and medical will require a cohesive, sustainable HPC system.

Importantly, while Tier 2 can often be provided through commercial facilities the profit-based business models for these facilities is not sensible for publicly funded research. The public should not expect companies and shareholders, especially if overseas based, to profit from publicly funded, merit-based research, such as those projects funded by the NHMRC, ARC or MRFF.

It is critical we maintain sufficient, predictable and capable underpinning HPC and data capability - separate to consideration of digital research infrastructure - as it is ubiquitous to Australian research.

HPC systems have a 4–5 yearly lifecycle, requiring mid- and full-cycle capital injections to maintain capability. This is in addition to operating costs, e.g. people and significant volumes of water and power (i.e. at the scale of suburbs). HPC systems also require trained personnel to support and upskill end-users to boost HPC efficiency via training, code reviews, job optimisation workshops and ongoing support.

The 2026 Roadmap must acknowledge the overarching need to develop and fund a long-term sustainable HPC capability with a single strong governance structure.

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