

### 1. What is your occupation?

- Researcher
- University Staff
- Business / Industry
- Government
- Higher Education Peak Body
- Industry Peak Body
- **None of the Above**

### 2. Are you responding as an individual or an organisation?

- Individual
- **Organisation**
- None of the above

### 3. What organisation do you work for?

National Committee for Physics of the Australian Academy of Science

### 4. Are the recommendations appropriate to the current NRI environment?

In the current environment, the National Committee for Physics supports the focus of the recommendations on global challenges such as climate change and clean energy, and the development of Australian self-sufficiency in areas such as advanced manufacturing, defence, and space, and minerals processing. Physics research and a physics-educated workforce have much to contribute to development and operation of the research infrastructure necessary to achieve these goals.

### 5. Do the principles articulate the vision and key elements required of NRI, including investment?

The National Committee for Physics supports principles articulated in the draft Roadmap. Of particular importance is the focus on “people, skills and knowledge”, to which a STEM educated workforce is vital. In order to maintain the significant contribution that Physics in Australia makes to innovation in many areas, including cross-disciplinary research, the following principle is pivotal:

- *NRI enhances participation of researchers in, and provides access to, the international research system.*

### 6. The NRI Roadmap has a clear focus on identifying the NRI investments required to support Australian research over the next 5 to 10 years. Are there any national research infrastructure needs missing in the draft Roadmap?

The draft Roadmap identifies world-class nanofabrication facilities as key enablers for research in many disciplines, including biology, medicine, chemistry, physics, quantum technology and astronomy (via advanced optical coatings and astrophotonics). Whilst a wide range of nanofabrication infrastructure exists in Australia, it is fragmented and not well integrated. The National Committee for Physics

encourages the consolidation of nanofabrication infrastructure into centres of international excellence available to researchers from all disciplines, supported by high quality technical staff who have clear career pathways.

**7. A key priority for Australia is to enhance research translation. The 2021 NRI Roadmap identifies some reforms and investments to achieve this. What other reforms would help deliver this priority?**

Universities are a major contributor to research in Australia, and it is recognized that better translation of research outcomes is vital to Australia's economic development. Impediments to translation of University research include non-uniform IP protection policies, and real or perceived impediments to academic career advancement through industry engagement and placements. Addressing these impediments is important to optimize the value of the research infrastructure (including human capital) available in Universities for the development and translation of new technologies.

**8. The Roadmap proposes that Australia could make landmark investments to drive step changes in research and innovation over the next 10 to 15 years. Do you agree with the assessment of potential areas for investment in the report? What other areas do you consider might fit the definition of landmark investment?**

The National Committee for Physics recommends broadening the definition of "landmark investments" to allow for opportunities to participate in major research infrastructure projects largely funded by the international scientific community that come up at short notice. An example was the proposed "LIGO South" project, which would have seen a third LIGO gravitational wave detector built in Australia. This would have been largely funded by the US National Science Foundation via the provision of all of the active components of the detector - the high-power lasers, mirrors, suspension and vibration isolation. Australia was asked to contribute fixed infrastructure in the form of vacuum pipes and vacuum equipment, and buildings. Due to the short timeframe required for a decision and the lack of an appropriate funding mechanism, the opportunity was missed and the third LIGO detector was located in India – far from ideal in terms of the triangulation requirements for the three detectors.

**9. Please add any other comments you would like to provide to the Expert Working Group.**

**10. If you have a PDF (.pdf) or Word document (.doc or .docx) to share as part of your feedback, you can upload your file here. Please keep documents brief.**