



Professor Mary O’Kane

Chair, Australian Universities Accord Panel

Submitted via online portal

Dear Professor O’Kane,

Sydney Quantum Academy (SQA) is a unique partnership between four major NSW universities – Macquarie University, UNSW Sydney, the University of Sydney and University of Technology Sydney, supported by the NSW Government. Our vision is to grow Australia’s quantum economy. We do this by collaborating with academia, industry and government, harnessing Sydney’s collective quantum expertise to help create the workforce for a new technology ecosystem.

Recognising the expertise, experience and connection the SQA has within NSW, the Federal Department of Industry, Science and Resources (DISR) has provided funding to Professor Peter Turner and the SQA to lead the National Quantum Collaboration Initiative (NQCI), to deliver a proposal for how to accomplish similar success on a national scale. The NQCI falls under Theme 3 - “a skilled and growing quantum workforce” - of the [National Quantum Strategy](#) released in May 2023. Through a comprehensive national consultation with thousands of quantum stakeholders, the NQCI program aims to develop and recommend an approach to the Federal Government that will encourage national collaboration on the development of a future diverse workforce, and create a pipeline of quantum skills while ensuring Australia retains specialised talent.

The consultation commenced in earnest in July 2023, and the final report to DISR will be submitted in April 2024 (with an interim report due in Nov). While it is still too early for any formal recommendations, there are a number of areas for further consideration in the [Australian Universities Accord Interim Report](#) that are directly relevant to the Government’s need to grow skills in deep technologies like quantum.

Accord Interim Report Part B, Section C – Meeting Australia’s Future Skills Needs

It is absolutely clear that new approaches are needed to meet Australia’s future skills and workforce needs, especially in emerging technology areas like quantum. The NQCI program is seeking input on how to create a pipeline of quantum skills to ensure our future workforce, and already it is clear that there are a number of options and models to increase the number of people with quantum skills, as well as ensure the right mix of skills, noting there are additional challenges to developing skills in emerging technologies like quantum. One specific area of enquiry for the NQCI program is an enhanced graduate training model, similar for example to the Quantum Doctoral Training Centres in the UK (eg. [Bristol’s CDT](#)). These programs recognised that a traditional 3-year PhD may not be sufficient to equip graduates with the right mix of technical and business skills needed to support and sustain success in low maturity/high potential tech areas like quantum. **A higher education system that acknowledges these differences is essential**, which might include investment to enable similar programs in Australia in the short term.

Accord Interim Report Part B, Section D - Equity in participation, access and opportunity

While comprehensive data are not readily available, it is fair to say that the Australian quantum ecosystem (like most STEM areas) suffers from a lack of engagement of women, under-represented communities, and regional Australia. Increasing participation of these groups to create a diverse future workforce is a key area of focus on the NQCI program. Already it is clear that any proposals to increase participation will need to tackle diversity holistically, and include a focus on disciplinary diversity, as a way of increasing participation of people from under-represented groups more generally. This doesn't mean more specific initiatives to increase engagement of specific under-represented communities (eg. Aboriginal and Torres Strait Islander peoples) won't be considered, but the program is looking broadly at how to increase disciplinary and expertise diversity, with an expectation that this will have knock-on effects across other under-represented areas. In this context, disciplinary diversity for quantum includes moving away from physics as the dominant discipline and including other appropriate physical sciences (eg. computer science, mathematics, engineering, chemistry) as well as other disciplines (eg. biology, finance). **A higher education system that encourages and facilitates this is essential**, as investment to develop a diverse workforce will be key to the success of Australia's quantum economy.

Accord Interim Report Part B, Section H - Research, innovation and research training

Emerging technologies like quantum are at an especially high risk of losing existing quantum talent and being unable to develop new talent as a result of the volatility of research funding. **More predictable and sustainable funding for supervisors and students is needed to help ensure that Australia is able to train and retain the quantum talent we need for the future.**

We thank you, the Department, and the Accord Panel for the opportunity to share these reflections.

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