THE UNIVERSITY OF SYDNEY

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Deputy Vice-Chancellor (Research)

4 November 2022

The Hon. Ed Husic MP
Minister for Industry and Science
Department of Industry, Science and Resources

Dear Minister,

Thank you for the opportunity to contribute to the finalisation of the Commonwealth Government's national quantum strategy.

The University of Sydney is pleased to provide the following feedback on the proposed objectives and initiatives outlined in ***Australia's quantum advantage***, the Commonwealth's most recent consultation paper, released 5 October 2022, to underpin the development of this important national strategy.

As a founding partner of the **Sydney Quantum Academy** (SQA), we reiterate the key recommendations SQA made in its response to the Issues Paper released by the previous Government in April 2022. These included:

- The need for a comprehensive, long-term program of funding for quantum research similar in scale to those available for cybersecurity and artificial intelligence.
- Support for both fundamental research and industry development, signalling Australia's commitment to investors, talent and other stakeholders – domestic and international.
- The creation of a dedicated program to establish young researchers to pursue world-leading collaborative quantum work in Australia, and a complementary program to support researchers to commercialise their inventions.
- Investment in talent development and plans to increase the size of our quantum expert community, including reducing barriers to attracting talent from overseas.
- Policies to help grow a quantum startup ecosystem that will create and react swiftly to opportunities.

We have contributed to SQA's submission to this latest phase of consultations and offer the following feedback in three key areas to complement and reinforce the priorities SQA has emphasised. In doing so, we stress the importance of any new funding models that emerge serving to: incentivise collaboration; build on Australia's existing hubs of quantum strength; and ensure that all relevant areas of Commonwealth policy are working in alignment to support the strategy's objectives.

1. Quantum commercialisation ecosystem

We agree with SQA that the most effective approach for Australia to create a thriving environment for the translation of quantum technology is to support the development of quantum startups. Australia has been successful, to date, in establishing globally competitive quantum startups. However, rather than creating more new infrastructure, the national strategy should build on existing platforms to strengthen the startup support landscape. Funding models should incentivise collaboration between research institutions, industry and states to leverage funding and build critical mass – rather than drive competition, duplication and spread available resources thinly. A framework for dedicated pre-seed funding streams for quantum startups should be established through this strategy while leveraging new Commonwealth economic development investment programs like the National Reconstruction Fund and the Australia's Economic Accelerator.

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2. Quantum research infrastructure

Any new Commonwealth funding dedicated to quantum research infrastructure should become part of the National Collaborative Research Infrastructure Strategy (NCRIS) framework, ensuring that we adopt a strategic national approach to investing these scarce resources. We also recognise that the best infrastructure is only ever as good and productive as the people available to support its operation. Investing in the skilled workforce needed to create, operate and maintain quantum hardware and software should therefore form an essential part of the national approach to investing in quantum research infrastructure.

3. Quantum talent

It is well understood that Australia faces an acute quantum skills shortage, with the ecosystem's capacity for growth in the near-term constrained by our ability to graduate sufficient quantum PhDs domestically, or to attract and retain them from overseas. Ultimately it will be the size and quality of Australia's quantum workforce that will determine our prospects for success. The strategy must therefore invest in domestic talent development but also integrate with other relevant Commonwealth research training programs and industry policies (including the R&D tax incentive) to ensure that they are working in alignment to support the national strategy's objectives to significantly strengthen Australia's quantum workforce. To significantly increase Australia's capacity to develop its own quantum-skilled workforce, the strategy should consider working with the Australian Research Council to support universities to offer 'National Quantum Chairs' – with packages that are attractive to highly sought-after global and local candidates.

Visa and migration policies will also continue to be needed to assist universities, established firms and quantum startups to recruit top global talent. Our key suggestions include:

- That the Department of Home Affairs maintains the priority processing for quantum-related roles in skilled and employer related visa programs.
- An increased cap and/or fast tracking of student visa holders who engage in quantum-related studies to visas that allow work or permanent residency to ensure we retain this talent.
- Refine the Global Talent Visa (GTV) / Global Talent Employer Sponsored (GTES) programs and fast track applicants, to compete with the UK's Global Talent and 'High Potential Individual' visas; Canada's 'Global Talent Stream'; Japan's 'green card for highly skilled foreign professionals'; France's 'passeport talent' residence permit, and Hong Kong's 'Top Talent Pass' two-year visa.
- Extend maintaining the priority visa processing for skilled migrants in this field in the global talent visa programs (GTV and GTES), Employer Nomination Scheme (ENS), Temporary Skill Shortage (TSS) visas, and skilled related visa programs i.e., both state based and independent visa programs.
- Continue to focus on reducing the time it takes to process the visas of applicants destined for research degrees or jobs in the quantum sector.

We trust this feedback is helpful and look forward to working with the Government and other stakeholders to finalise this vital strategy and commence its implementation.

Yours sincerely,

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Professor Emma Johnston
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