



Submission to the Department of Industry, Innovation, Science, Research and Tertiary Education

Australian Academy of Science response to the Industry Innovation Precincts Consultation Framework Paper

Introduction

The Australian Academy of Science welcomes the opportunity to comment on the Industry Innovation Precincts as set out in the recently released *Industry and Innovation Statement*, and subsequent *Consultation Framework Paper*. The Academy has long supported efforts to strengthen research partnerships between universities, research institutions, government and industry. Such partnerships help to translate Australia's substantial and high quality research output into useful and valuable products, processes and services.

Successive Australian governments have recognised that undertaking high quality research and development (R&D) to drive innovation is at the heart of increasing productivity and competitiveness¹. More than half of all productivity growth in developed nations results from innovation². At present Australia is investing relatively less in research and development (R&D) than its competitors, and so is not fully reaping the benefits of an innovation led economy. R&D expenditure makes up just 2.2% of Australia's gross domestic product (GDP)³, putting Australia 13th among OECD member countries and significantly below the OECD average.⁴

Initiatives such as the proposed Industry Innovation Precincts could provide an opportunity to help redress this lack of investment and help deliver the economic benefits of an innovation led economy. However Australia does not just need to undertake more R&D, it needs to undertake more high quality R&D. Therefore it is crucial that investments in the proposed Precincts are undertaken in those areas that will most effectively convert knowledge into better outcomes.

Given both the scale and the importance of the proposed investments in the Industry Innovation Precincts, and in the corresponding Industry and Innovation Collaboration Fund, the Academy believes that it is essential that further detailed consideration be undertaken to ensure that the maximum benefits for industry and research are delivered through this substantial investment.

¹ DIISRTE (2009) Powering Ideas: An Innovation Agenda for the 21st Century. Available at <http://www.innovation.gov.au/innovation/policy/pages/PoweringIdeas.aspx>

² OECD (2012) OECD Compendium of Productivity Indicators 2012

³ OECD (2012) Main Science and Technology Indicators (eISSN: 2074-4226), available at http://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB

⁴ OECD (2012) Main Science and Technology Indicators. Volume 2012/1, available at http://www.oecd.org/sti/scienceandtechnologypolicy/keyFigures_20112_1_EN.pdf

As a starting point the Academy suggests that a period longer than one month is needed for stakeholder input to determine the processes by which more than \$500 million are to be invested, and that a period longer than two months is required for applicants to build the necessary bidding consortia required to put together high quality applications for Precincts.

Unnecessarily ambitious delivery timetable

The precinct selection process timetable as outlined by DIISTRE in their consultation presentation⁵ is very ambitious, and leaves applicants with just two months to bring together the necessary partners to compile what will be a substantial amount of information. There is a risk that the applications that succeed will be those in areas that have existing institutional and network capability, and have time and funding to develop an application at very short notice, rather than applications in the areas of greatest potential impact. There is a good argument for establishing Precincts in those areas that can deliver new growth opportunities through making the best use of our substantial research and capability, but do not currently have such well joined up institutional networks, since it would be the work of the Precinct to facilitate such networking.

The Academy suggests that the timeframe for developing stage one applications be extended. No logical explanation is offered as to why applications need to be received, assessed and announced by before September 2013.

The role of the National Research Investment Plan within the selection process

As the National Research Investment Plan⁶, and also the Chief Scientist's Health of Australian Science⁷ report makes clear, there are areas of research where Australia has an outstanding capability, and there are also specific areas of research where Australia needs to further enhance its capability to meet long term strategic challenges. The Australian Research Committee (ARCom) is currently developing an effective mechanism for targeting government research investment through the development of Strategic Research Priorities. According to the National Research Investment Plan this is likely to result in Australian Government research investment being allocated on a more strategic basis.

The *Industry and Innovation Statement* makes it clear that the work being undertaken by ARCom should be considered when selecting Precincts.

Work to be undertaken by the Australian Research Committee to progress agreed actions under the National Research Investment Plan will form an important input into the selection of Precincts. This includes the development of strategic research priorities and mapping of

⁵ Department of Industry, Innovation, Science, Research and Tertiary Education (2013) *Industry Innovation Precincts*. <http://www.aussiejobs.innovation.gov.au/programs/Industry-Innovation-Precincts/Documents/Industry-Innovation%20Precincts%20-%20Presentation.pdf>, accessed 18 March 2013

⁶ Department of Industry, Innovation, Science, Research and Tertiary Education (2012) *National Research Investment Plan*.

⁷ Chief Scientist (2012) *Health of Australian Science*

Australia's research capability, ensuring knowledge and skills developed by our research sector are aligned with industry needs⁸.

However within the *Consultation Framework Paper* and within the *Draft Program Guidelines* no mention is made of the importance of ensuring any level of alignment between investments in Precincts with the National Research Investment Plan and the Strategic Research Priorities. The *Consultation Framework Paper*⁹ states part of the purpose of the Precincts is to create better links between industry and researchers so that businesses have more timely access to the latest research and development. Such links are needed as Australia has performed below average in international measures of linkages between industry and research for the last three decades¹⁰. Therefore it would make good strategic sense to ensure that Precincts are being established in areas where the Australian Government will be investing in research capability.

The Academy suggests that the *Draft Program Guidelines*, and specifically the selection criteria employed in the assessment of applications, be revised to ensure that the National Research Investment Plan, and the Strategic Research Priorities being developed by ARCom, play a central role in the selection of Precincts.

Maximising returns from public investment in research

Each year the Australian Government makes an investment of approximate \$9 billion in science, research and innovation¹¹. As the National Research Investment Plan identifies, Australia's national wellbeing as reflected in the health and lifestyle of the population and the security and sustainability of the environment, is dependent on this investment¹². In the absence of this government investment, neither the business nor the non-business sectors are likely to carry out the amount of research necessary to sustain national wellbeing¹³. Therefore it is essential that every dollar of science, research and innovation funding must be awarded on the basis of merit only.

Funding through existing schemes such as those delivered by the ARC, NHMRC and DIISTRE's CRCs, is awarded on the basis of merit and this provides the quality assurance that valuable public investments are only awarded to the very best research. It is unclear in the *Consultation Framework Paper* and the *Draft Program Guidelines* how such quality will be assured in both the initial awarding of the Precincts, and subsequent awards made from the \$130 million Industry and Innovation Collaboration Fund. Unlike in the ARC, NHMRC and CRC schemes, there is to be no peer review of applications, instead decisions are to be taken by the Minister on the advice of the National Precincts Board.

⁸ Department of Industry, Innovation, Science, Research and Tertiary Education (2013) *A Plan for Australian Jobs: The Australian Government's Industry and Innovation Statement*

⁹ Department of Industry, Innovation, Science, Research and Tertiary Education (2013) *Industry Innovation Precincts Consultation Framework Paper*, page 1

¹⁰ Prime Minister's Manufacturing Taskforce (2012) *Report of the Non-Government Members*, page 67. Available at <http://www.innovation.gov.au/Industry/Manufacturing/Taskforce/Pages/default.aspx>

¹¹ DIISTRE (2012) The Australian Government's 2012-13 Science, Research and Innovation Budget Tables. <http://www.innovation.gov.au/AboutUs/Budget/Documents/SRIBudgetTables2012-13.pdf>

¹² Department of Industry, Innovation, Science, Research and Tertiary Education (2012) *National Research Investment Plan*.

¹³ Department of Industry, Innovation, Science, Research and Tertiary Education (2012) *National Research Investment Plan*.

The National Precinct Board has only just been established and at this early stage has not undertaken work to find out which areas of industry would be best served by through a strategic investment in an Innovation Precinct. The approach put forward in the *Consultation Framework Paper* invites consortia to put forward bids in any area. The expectation is that the National Precinct Board will recommend the bids that score most highly to be funded. This will result in the Precincts with the best prepared applications (developed within a two month window) against the set criteria being recommended for funding, rather than Precincts being funded in areas that are of strategic national importance.

The Academy recommends that before awarding public funds from the already under pressure Science, Industry and Innovation budget, that work be undertaken by the National Precinct Board to determine the broad areas where Precincts would make a significant difference. Following this work the National Precinct Board could then invite applications in specific areas.

The Academy recommends that applications be assessed by properly qualified panels of peer reviewers with expertise in the proposed area of industry for the Precinct and in relevant research (including translation research).

Benefits from international collaboration

As the *Consultation Framework Paper*, and the *Industry and Innovation Statement* rightly identifies, the evidence shows that Australia has relatively low levels of international collaboration compared to other leading countries^{14,15}. The idea for the Precincts emerged in the Prime Minister's Manufacturing Taskforce report. In this report it states that such Precincts need to be designed from the outset to provide mechanisms to showcase Australia's strategic directions and capabilities to the world, and connect Australia to the 98 per cent of knowledge generated overseas through links with international research, business and government communities¹⁶. The *Consultation Framework Paper* states that the Precincts are to have a significant role in building and developing international linkages and networks¹⁷.

Developing such international linkages and networks is a competitive undertaking, as the 2012 *Australia in the Asian Century White Paper* acknowledges, we cannot take opportunities for granted, and we need continued investment and stewardship to maintain and build upon our present links¹⁸. The scientific and innovation landscape is changing with Asia's role growing rapidly. Australia has been falling behind since the International Science Linkages program came to an end in 2010. Unlike their overseas counterparts Australian scientists lack national strategic engagement support crucial

¹⁴ Department of Industry, Innovation, Science, Research and Tertiary Education (2013) *Industry Innovation Precincts Consultation Framework Paper*, page 3. Available at <http://aussiejobs.innovation.gov.au/industry-and-innovation-statement/Pages/default.aspx>

¹⁵ Department of Industry, Innovation, Science, Research and Tertiary Education (2013) *A Plan for Australian Jobs: The Australian Government's Industry and Innovation Statement*. Available at <http://aussiejobs.innovation.gov.au/industry-and-innovation-statement/Pages/default.aspx>

¹⁶ Prime Minister's Manufacturing Taskforce (2012) *Report of the Non-Government Members*, page 70. Available at <http://www.innovation.gov.au/Industry/Manufacturing/Taskforce/Pages/default.aspx>

¹⁷ Department of Industry, Innovation, Science, Research and Tertiary Education (2013) *Industry Innovation Precincts Consultation Framework Paper*, page 6

¹⁸ Australian Government (2012) *Australia in the Asian Century White Paper*. Available at <http://asiancentury.dpmc.gov.au/white-paper>

to gaining access to new knowledge. Such strategic support is available to our collaborative partners. Providing funding for the Precincts alone will not be enough for Australia to succeed in this, strategic direction and funding for collaboration opportunities is needed.

The Academy recommends that improving Australia’s competitiveness, awareness, governance and diplomacy for engagement in international research should be a high priority when developing any policy to improve Australia’s innovation capability.

The Academy recommends that to deliver on the commitments outlined in the *Industry and Innovation Statement*, part of the response that is needed is an integrated international science and innovation program with an investment of \$25 million per annum as outlined in the Academy’s paper on international science collaboration¹⁹.

Selection criteria

According to the draft guidelines applications will be assessed against four equally weighted criteria: capacity to create new growth opportunities, existing industry and research capability, the ability to create critical mass in areas of competitive advantage or emerging opportunities, and funding and in-kind commitments. However, both the *Consultation Framework Paper* and the *Draft Program Guidelines* provide very few details as to how applications will be scored against the criteria established by the National Precincts Board, or the level of detail that applicants need to provide. Over a quarter of the assessment is weighted towards funding and in-kind contributions. Whilst such funding commitments are of importance, it is questionable as to whether they are as important as the other three criteria listed given the scale of long-term economic benefits that Precincts are envisioned to deliver.

The Academy suggests that the draft guidelines provide specific detail on the scale of funding and in-kind commitments that the National Precincts Board will be expecting applicants to put forward. High scoring in this area of the application process should not necessarily relate solely to the size of the funding and in-kind commitment put forward. In addition to the size of commitment, its appropriateness to the type of application being put forward should also be considered. Here it is important to note that the level of required commitment required is likely to differ significantly by industry, and whether the application is for an established or emerging industry innovation precinct.

The Academy suggests that the National Precincts Board apply suitable flexibility when assessing the appropriateness of the scale of funding and in-kind commitments put forward by applications.

Utilising research skills within industry

Over the past ten years the number of PhD students registered for research in Australia has increased by almost 70 per cent, with a total of 6700 PhDs awarded annually by Australian

¹⁹ Australian Academy of Science (2011) Australian science in a changing world: innovation requires global engagement. Available at: <http://science.org.au/reports/documents/Innovationrequiresglobalengagement.pdf>

universities²⁰. Given that 80% of PhD graduates do not end up as academic researchers it is highly beneficial for PhD students to be exposed to other potential career paths where they can develop skills that are needed by employers outside of academia. The Academy fully supports the proposal within the Consultation Framework Paper for scientific PhD graduates to be offered short term placements to assist on business projects, and for PhD graduates to provide advice on business research, development capability, and project feasibility. The proportion of researchers working in Australian businesses is far lower than other successful innovative nations, and this approach has the potential to demonstrate the benefits to business of employing highly skilled researchers.

The Academy suggests that these proposals be developed further, with a view to also including early and mid-career researchers (EMCRs).

It would be highly beneficial for each Precinct to have within its research engagement strategy a plan for providing ongoing links and placements within industry for science PhD students and also EMCRs. Such an approach would be in line with the *Top Breakthrough Actions for Innovation* recently released by the Office of the Chief Scientist²¹, promoting further mobility of researchers between academia and industry. The Academy, through its Early and Mid-Career Researcher Forum, which includes over 3,000 active researchers working in science, would be happy to provide assistance in developing this proposal further.

²⁰ DIISTRE (2011) Student 2011 Full Year: Selected Higher Education Statistics Publication. Available at <http://www.innovation.gov.au/HigherEducation/HigherEducationStatistics/StatisticsPublications/Pages/default.aspx>

²¹ Office of the Chief Scientist (2012) *Top Breakthrough Actions for Innovation*. http://www.chiefscientist.gov.au/wp-content/uploads/Item_3-Breakthrough-Actions.pdf. PMSEIC, December 2012