# NSW Universities Intellectual Property Review

## Summary advice to the Hon Alister Henskens SC MP

Given significant government investments in R&D and innovation and having launched the NSW 20-Year R&D Roadmap, the Hon Alister Henskens SC MP in his role as Minister for Science, Innovation and Technology sought advice on the most effective intellectual property (IP) settings to drive collaboration for and commercialisation of R&D undertaken in or with NSW universities.

A panel series was used to provide 'first pass' and pragmatic advice on current settings, what is and is not working and potential improvements. Without limiting the focus of feedback, participants were asked specifically about (a) the "roadblocks" that they identified as negatively impacting the commercialisation of inventions; (b) the best role that government could play in removing or at least reducing these roadblocks and (c) other strategies for a more integrated (state-wide) approach to generate efficiencies and accrue greater benefits, that is, greater impact for inventions.

A short desktop review of university policies, reviews and innovation metrics was also undertaken. This revealed a reasonable uniformity in those policies which purported to provide benefits for inventors and retain degrees of benefit for, and control by, the institutions in which they were employed. What is absent is a clear statement on what the role of the university can or should be in the path to commercialisation, given their traditional focus on teaching and research.

It is apparent that these policies are not providing the necessary incentives to drive commercialisation of inventions and, indeed, there has been criticism to the effect that the retention of control of IP by inventors and the institutions is a disincentive for potential commercial partners. For example, the common approach of providing a 'share' of returns for the inventor and others ('three-way cut') has not delivered the hoped-for change. Indeed, early distribution formulae are reported as a major disincentive for both companies and investors - presenting a value dilution problem and time/effort impediments to progressing the invention. Further, the commercialisation of inventions does not necessarily result in a stream of wealth to the inventors or the universities. Investor views were adamant that the returns on the commercialisation of an invention should necessarily go proportionately to those parties that provided the investment of time and money to make it happen. On the other hand, universities and research institutes need to be rewarded, or see reward, from the use of their resources, which include the time of research staff, the utilisation of infrastructure and of patents obtained and maintained by those institutions.

The amendment of IP policies, to mitigate the negative consequences of the fact that they generally tend to be internally rather than externally focused (that is, on the institution and inventors rather than on potential investors), while delivering appropriate return to the universities and research institutes, requires further consideration and consultation that was not possible in the time accorded this Review. Further, other impediments at an earlier stage of commercialisation were identified, which require amelioration before IP policies apply.

The following reflects a synthesis of feedback to the Review. While there was a strong convergence of views, unsurprisingly, there is not universal consensus on solutions. It was striking however, that almost all participants identified institutional cultural hurdles (specifically in universities, but also in other research institutions such as medical research institutions) as a, if not the, primary roadblock. This is a complex, long-standing and multi-faceted issue without a 'silver bullet' solution. The cultural changes identified must come from within the institutions themselves. Some change is occurring, but it is not uniform, nor sufficient, nor timely. Accordingly, the Review sought to focus on steps that could be taken by government – and other steps within the remit of universities to which government could draw attention to, or perhaps influence directly or indirectly.

A consistent view expressed was that even modest changes to current settings and practices would have beneficial impacts. There was also general agreement that attention be given to the impact (or 'inventiveness') of NSW research which includes, but is not limited to, commercialisation of inventions.

This includes the financial and non-financial returns to government and the broader community from HASS-related research. Other points of note:

- Not all research takes place in universities (or medical research institutes). Industry is responsible for much of the commercialisable intellectual property.
- When considering industry, it should be recalled that it is composed largely of SMEs. Those SMEs do not necessarily engage, or think of engaging, with the institutions where inventions and the creation of intellectual property take place. There is insufficient contact between the place that has the problem and the place which can provide the solution.
- Decisions to advance to possible commercialisation must be taken quickly.
- Early decisions as to whether to stop/go on an invention must involve commercial and business expertise and this is not readily available, even in larger institutions such as universities. The knowledge or IP with potential for impact that is generated within universities is usually (although not always) at a low Technology Readiness Level (e.g. TRL 2-3) and is not the final information that delivers ultimate financial returns. The ability to bridge the gap between TRL 3 and TRL 7 is largely missing within the university and research institute sector and may be best undertaken outside the university setting.[1]
- A key observation was that invention, translation and commercialisation are not only not recognised in university systems as important and valuable, but their pursuit also inhibits academic promotion. Consequently, inventors are disincentivised from doing other than publishing their work, rather than translating it to have beneficial impact on the NSW community. This same cultural approach is present in medical research institutes.

The following recommendations focus on actions within the remit and influence of government. Further work is needed on how they may be best implemented and aligned and integrated with the existing range of investments made by the NSW and Commonwealth Governments. Importantly, although this Review sought a broad range of views, the primary focus provided in the panels consulted was on university IP frameworks and practices. There is a need to consult more deeply with industry on proposed measures.

## Recommendations

1. **Establish a research impact platform** ('Research Impact NSW' or similar) to triage and connect companies and researchers to relevant commercialisation and IP capabilities, expertise and programs and to help 'funnel' opportunities to the investment community (venture capital, angel investor, philanthropic). The New Zealand Return on Science was frequently cited as a positive exemplar of a networked approach that NSW could adapt.

   The Review was presented with a twin challenge underpinning this recommendation- (a) the need for access by researchers to early relevant expertise to evaluate the potential of ideas and technologies and provide globally informed advice on pathways to take their ideas forward and (b) investor community feedback that ideas and requests are presented that are not at the point of being 'investor-ready'.

   The commercialisation capacity of universities is challenged by funding and available skills. There is no need to delve here into the capacity of university technology transfer offices to provide the necessary timely advice but it suffices to say that they do not have capacity, for reasons that include under-staffing, range of expertise and movable staff, to assist the full range of potential opportunities. Government funded added capacity for these offices across the sector is not practical, nor would this necessarily be sufficient.

[1] There are examples of this being successfully undertaken e.g. in drug discovery such as the WEHI National Drug Discovery Centre and the Queensland Emory Drug Discovery Initiative. However, this requires focused investment and capacity, and was broadly seen as the exception rather than the rule.

The needs of innovators are diverse and often complex but so too is the array of systems and programs to be navigated, with even the most experienced stakeholders expressing confusion about identifying and accessing what is available. The platform would provide an important component in the ecosystem that can direct companies and researchers to capabilities relevant to their area of specialisation and stage of development. Functional aspects, for example, may include simply informing researchers of existing programs and advisors, or other government departments where their work may have relevance; it may help the researchers liaise with industry or government partners; it may provide, either directly or by contract, early commercial advice.[2] Other assistance could include drafting common contractual provisions and governance arrangements to improve timeliness of industry and investor engagement.

The Review process indicates this functionality is best located outside universities. Depending on functionality, it could be located in government or commissioned to operate independently. Whatever model, those providing such "triage" assistance would need to have the skills and knowledge to know where to go to provide assistance and, as needed, should contract in networks of expertise.

2. **Establish a breakthrough fund to drive translation and commercialisation of knowledge** into existing and new industries and applications that is similar in scale, independence and agility as Breakthrough Victoria. The initiative complements and supports recommendation one and should be aligned with the NSW 20-Year R&D Roadmap and identified priority industries.

   The investments already made by NSW Government to enable and support translation and commercialisation were positively recognised and the Review met with companies which directly benefitted from this support. The breakthrough fund would provide early stage support and should be integrated with existing investments. Consistent with other reviews, providing early-stage investment, including Proof of Concept is critical, bridging the 'valley' for early stage researchers and companies and de-risking and enabling follow on private investments. This needs to be complemented by rectifying an identified gap: demonstration scale infrastructure to validate research (post pilot phase) to determine if it actually has commercial or market prospects. Importantly, this fund should have a focused outcome on translation and must not be used, or be able to be used, simply as more research funding.

3. **Establish a voucher program that companies and researchers can draw on to obtain advice on intellectual property protection and early commercialisation advice**. This initiative may benefit from a national approach and discussions with IP Australia, Knowledge Commercialisation Australasia as well as other Australian jurisdictions.

   Further consultation should be undertaken with NSW industry as to how the program could be best designed to address their challenges in establishing, maintaining and defending IP portfolios. Any assistance needs to be targeted to the commercial/entrepreneurship external advice necessary to take research outcomes to the path of venture capital support.

   The voucher program could include enabling researchers and companies to undertake readily available commercialisation courses (such as those provided by commercial partners and by CSIRO and UNSW).

4. **Extend the voucher program** (recommendation three) **to support and establish a 'commercialisation release' funding program** for NSW university based researchers to backfill teaching responsibilities and to support agile pathways between academia and industry. In this regard, consideration should be given to supporting a scheme for inventors to work in industry or to commercialise inventions, (perhaps analogous to maternity leave), and the ability to utilise sabbatical leave to do so. The provision of entrepreneurial advice and experience for early career

[2] It is recognised that elements exist under various programs.

researchers provides, in turn, for career outcomes beyond scarce academic positions and avoids loss of their inventive expertise, an important state resource.

5. **Incorporate a core set of impact and commercialisation metrics into NSW R&D, innovation and commercialisation funding programs** to incentivise (a) commercialisation activities and (b) a more consolidated approach to commercialisation platforms and infrastructure within and across universities.

   Current measures of success are weighted towards traditional academic products such as publications and citations and research grants, and not invention, or commercialisation effort, or work undertaken to address government/community challenges. There is a need to establish metrics linked to career pathways and university funding models. Importantly, universities need to be incentivised to recognise and support such pathways for academics, both early career and senior, so that invention and commercialisation do not, and are not seen to, prevent recognition and promotion.

   This could include, for example, core requirements to (a) embed baseline (and cross-sector) curriculum on impact, translation and commercialisation in all post graduate qualifications, including the reason *why* commercialisation is important; (b) undertake impact training which is presently available and (c) participate in accelerator and incubator programs e.g. through Cicada Innovations. The voucher system referred to above could be utilised to support (b) and (c).

   Reporting metrics on commercialisation and infrastructure capacity within universities would also highlight the scale of capacity and incentivise those institutions to enhance the required outcomes without career disadvantage. This is particularly important given existing faculty structures are currently geared towards teaching and research only.

   These metrics should also be aligned with, and draw on, work being undertaken at national level including the current Higher Education Accord review and the ACOLA review of Australia's research training system. Care must also be taken to avoid perverse outcomes such as measuring or encouraging 'activity without impact'.

6. **Review the current distribution-control model used in NSW intellectual property policies** (the 'three-way cut') to address this roadblock for investors to invest, and explore alternative approaches, including examples that will deliver benefits in the longer term to the individual inventor and to universities and research institutions. Importantly, this work would need to demonstrate short- and long- term impacts and beneficial trade-offs for universities and other research entities for income reduced or forgone.

7. **Consider establishing commercialisation/impact categories in awards and prize programs**. This serves a dual purpose – recognition for achievements in non-traditional academic endeavours and providing case studies to emulate. NSW could do more to publicise stories of impact success, including in areas of non-STEM research.

8. **Communicate key findings to NSW University Chancellors and Medical Research Institute Chairs** on the roadblocks identified during this Review and encourage a consistent and whole of sector response. Consideration could be given to reconvening the ARDAC (or similar) to help drive specific pieces of work, including implementing concepts such as **innovation leave**, the ability to use sabbatical leave for commercialisation activities and changes to other policies that inhibit commercialisation activities as outlined above.

**The Hon Dr Annabelle Bennett AC SC**
**24 February 2023**