

**Submission
No 15**

INQUIRY INTO FUTURE DEVELOPMENT OF THE NSW TERTIARY EDUCATION SECTOR

Organisation: The University of Sydney

Date Received: 24 July 2020



THE UNIVERSITY OF
SYDNEY

Dr Michael Spence AC
Vice-Chancellor and Principal

24 July 2020

The Hon. Mark Latham MLC
Chair, Portfolio Committee No. 3 - Education
Parliament House
Macquarie Street, Sydney

By email: portfoliocommittee3@parliament.nsw.gov.au

Dear Mr Latham,

Inquiry into the future development of the NSW tertiary education sector

Thank you for the opportunity to make the attached submission to the NSW Legislative Council inquiry into the future development of the NSW tertiary education sector.

I thank the Portfolio Committee No. 3 - Education for its interest in tertiary education in NSW at this time of great challenge for the State and the sector. The tertiary education sector has a critical role to play as NSW looks to recover from the COVID-19 pandemic and recession and the University of Sydney looks forward to assisting the inquiry.

Should the Committee require anything further from the University, please do not hesitate to contact Mr Tim Payne, Director, Higher Education Policy and Projects in my office in the first instance

Yours sincerely,

Michael Spence

Attachments

A: The University of Sydney submission to the NSW Legislative Council inquiry into the future development of the NSW tertiary education sector, July 2020

B: Map of the University's campuses, teaching locations and other facilities across NSW

The University of Sydney submission to the NSW Legislative Council inquiry into the future development of the NSW tertiary education sector, July 2020

ToR(a) - Tertiary education's economic development role, especially university campuses and Country University Centres (CUCs) in regional NSW

Campuses and teaching locations

While metropolitan-based, the University's campuses, teaching locations and activities extend widely across NSW (see map at Attachment B). From operational teaching and research farms in Narrabri, the Liverpool Plains and Camden, to Schools and Departments of Rural Health in Dubbo/Orange, Broken Hill and Lismore, the University serves and advances communities across NSW and beyond.

Educating students for success in life and work

Data and analysis from the Reserve Bank of Australia confirm that through the almost three decades of economic expansion that preceded the 2020 pandemic and recession, jobs growth in Australia has been much higher in fields that require higher-level qualifications and skills than in those needing lower-level education and manual skills.¹ It is widely accepted that people with higher levels of education and knowledge, strong generic skills and individual qualities will have the best employment prospects throughout their working lives.² In response to these trends the University has recently transformed its undergraduate curriculum to ensure its students are graduating with the mix of deep disciplinary expertise, broader skills and personal attributes the available evidence suggests will prepare them well for success in work and life.³ For the past five years the University has ranked first in Australia in the QS Graduate Employability Rankings and in 2020 moved up one place to rank fourth in the world.⁴

The University's economic impact

In May 2020, the University released the results of modelling commissioned from independent economists ACIL Allen Consulting on the contribution the University's activities make to the economy. The [report](#) concluded that in 2019 alone, the University contributed \$5.3 billion to the NSW economy and \$5.9 billion to the national economy. Moreover, the study found that since 2006, the University has contributed \$68.3 billion to the Australian economy. In 2019 that contribution helped to support the equivalent of almost 31,300 full-time jobs in NSW and over 35,600 nationally. Most of these jobs are outside the University and are found across the economy, including in retail, construction, tourism, real estate and hospitality. The report also found that every dollar invested in the University's research generates an extra \$7.82 for the economy, with research activities from 2019 set to add close to \$2.2 billion to the national economy.

¹ <https://www.rba.gov.au/speeches/2020/sp-so-2020-03-16.html>

² University of Sydney, *Developing a distinctive undergraduate education*, Strategic Planning for 2016-20, Discussion Paper No.1

³ <https://www.sydney.edu.au/news-opinion/news/2016/04/01/university-of-sydney-launches-2016-20-strategic-plan-.html>

⁴ <https://www.sydney.edu.au/study/why-choose-sydney/employability-and-careers.html>

ToR(b) - The mission of NSW universities with a particular focus on the role of universities to serve specific geographic communities

[The University of Sydney 2016-20 Strategic Plan](#) represents phase two of a 10-year vision. Building on our 2011-15 Plan, it aims to create and sustain a university in which, for the benefit of both Australia and the wider world, the brightest researchers and the most promising students, whatever their social or cultural background, can thrive and realise their potential.

The Plan has been built around four strategic themes: excellence, engagement, a values-based culture and organisational simplification. It is underpinned by the shared values of courage and creativity, respect and integrity, inclusion and diversity, and openness and engagement.

The University exists to make lives better by producing leaders of society and equipping our people with leadership qualities so they can serve our communities at every level. The contribution we make to the diverse geographic communities we serve is addressed in our response to ToR(a) above.

ToR(c) - The post-pandemic return of foreign student numbers and the financial sustainability and risk management strategies of NSW tertiary education institutions

To partially address a \$470 million projected reduction in income for 2020, the University has to date taken savings measures totalling \$300 million, covering:

Measure	Estimated saving
Capital spending	\$127 million
Non-essential projects, consultants and contractors	\$52 million
Recruitment and casual staffing	\$93 million
Travel and scholarships	\$23 million
Other measures	\$5 million
Total	\$300 million

These measures have been designed deliberately to minimise the impact on University staff. If the University is unable to recover its international student enrolments in 2021, a further \$500m-\$700m revenue impact is predicted. If this occurs, similar and additional savings measures will be required and it will be impossible to avoid substantial job losses.

The University is working in collaboration with the New South Wales Vice-Chancellors' Committee (NSWVCC) to welcome back our international students in appropriate numbers to maintain NSW's ongoing record for keeping its residents safe and well.

The University has outlined a three-step roadmap for a phased return of face-to-face activities on campus, aligned with the Federal Government's '*Roadmap to a COVIDSafe Australia*'.

There is ongoing work across the University to develop a co-ordinated approach to the planning of a gradual return to campus. The University has also been carrying out enhanced cleaning processes for high-touch points since February this year. Cleaning requirements for particular activities and areas are being reviewed as part of the return to campus planning, in line with Safe Work Australia guidelines. The University will continue to consult with its staff to best manage this transition.

ToR(d) - The quality of university teaching and research, including the extent and impact of insecure employment in the sector

As noted in our response to ToR(a), the University leads Australia and consistently ranks near the top of the QS Graduate Employability Rankings. The University recognises, however, that it has work to do to improve overall levels of student satisfaction with their study experience as reported through annual student and graduate surveys. Over the period 2019-21, we are investing significant resources to support initiatives to improve the experience of our students. We aspire to deliver an outstanding learning experience for all of our students, whether domestic or international, undergraduate or postgraduate, coursework or research. We aim for an educational environment where our students feel connected to the University community, are engaged fully in learning and are achieving excellent educational and graduate outcomes.

Excellence in research and teaching makes the University of Sydney one of the top universities in Australia and highly ranked among the best universities in the world. For example, the most recent Australian Research Council Excellence in Research for Australia (ERA) Initiative rated all 22 of the University's broad fields of research as above or well above world standard.

Examples of impactful University of Sydney research

Monetising plastic waste

Founding Director of the Laboratory of Advanced Catalysis for Sustainability, [Professor Thomas Maschmeyer](#), has created a chemical process that converts plastic waste into usable products, such as fuel or new plastic, that can be used again and again. The [Catalytic Hydrothermal Reactor](#) (Cat-HTR) process can handle any kind of plastic, effectively transforming the waste that is currently an unsightly global liability into a valuable, monetisable resource. The Cat-HTR process takes about 20 minutes, with low energy usage and minimal greenhouse gas emissions. This technology means the approx. 300 million tonnes of plastic produced each year around the world - 50% of which is not currently recycled - can be quickly turned into a major resource.

World's first synthetic bone

[Professor Hala Zreiqat AM](#), Head of the University's Tissue Engineering and Biomaterials Research Unit, has pioneered a remarkable synthetic bone substitute that could revolutionise surgery for millions of patients and the medical profession. This 3D-printed ceramic scaffold redefines 'one-off surgery' because it is designed to minimise costs and complications for patients and improve their quality of life for the long term. Prof Zreiqat hopes the scaffold, which draws on the body's own healing powers to regenerate natural bone and gradually dissolves after it is implanted, will make obsolete conventional implant technology, which relies heavily on metal plates and screws and donated bones.

Synthetic skin, which is changing the lives of severe burns victims

University of Sydney McCaughey Chair of Biochemistry, [Professor Anthony Weiss AM](#), founded Elastagen Pty Ltd in 2005 to commercialise his breakthrough - a process to manufacture a protein called tropoelastin (essentially a form of a synthetic skin) to treat patients with severe burns and chronic wounds. In 2018, Elastagen announced that it was to be acquired by Allergan plc, one of the world's 20 largest biopharmaceutical companies. This deal, worth more than \$A350 million, is one of the largest transactions ever completed in the Australian life science sector. It has been estimated that the benefits to burns victims and the health system in Australia alone over the next 10 years will be more than \$114 million.

Breeding rust-resistant wheat crops

Wheat rust has the potential to devastate crops and, with more than 20 per cent of the world's population relying on wheat as a food staple, it is a serious threat to food security. The Director of the Australian Cereal Rust Control Program, [Professor Robert Park](#), works closely with the cereal industry on [rust-resistance breeding](#), saving the Australian wheat and barley crop sectors over \$600 million a year. He has developed and applied DNA-based markers to understand how rust pathogens - which can devastate cereal crops - change. In addition to the crucial benefits for food security and agriculture, this disease-resistance strategy is the most sustainable approach to control rust pathogens. It has also protected the Australian environment by reducing the need to clear native vegetation for food production.

Robotics revolutionising agricultural growing capacity

[Agricultural robots](#) are creating smarter ways of farming for large-scale farming in Australia and revolutionising small to medium size farming in developing countries. At the [Australian Centre for Field Robotics](#), Professor Salah Sukkarieh's work on a data-driven digital platform, which connects small-scale farmers to a global growing community while helping increase growing capacity, has secured his place alongside a list of prominent innovators. The SwagBot, for example, is an omni-directional electric ground vehicle designed for use on grazing livestock farms, while the RIPPA™ (Robot for Intelligent Perception and Precision Application) is the University's production prototype for the fruit and vegetable growing industry. Robotics offers a way of increasing farm productivity while also creating new skilled jobs that can attract more young people into agriculture. Prototype systems have been developed in the laboratory and are currently being commercialised through a University of Sydney start-up (Agerris) with the aim of minimising production costs and improving the marketable yield. In 2019, Agerris raised \$6.5 million to enable it to manufacture its tractor-sized robots.

ToR(e) - Levels of integration of the tertiary education sector with industry

The University has a strong record of partnering with industry, government and the non-profit and community sectors to tackle society's most pressing challenges, evidenced through our [research impact](#) and being [ranked 1st in Australia and 2nd in the world for impact](#). Our researchers have been at the forefront of informing both the bushfire and [COVID-19 response](#).

Through [partnerships](#) with government, industry and the community we are building collective resilience and contributing to the nation's recovery from the pandemic and recession. We are committed to furthering these partnerships to maximise education, research and social impact outcomes. To that effect, we proactively communicate the value of and opportunities for University-industry collaboration ([see our recent partnership magazine](#)), regularly engage in external business forums and invite industry to our [public talks and industry briefings](#).

Over the past five years, the University has founded 27 spin-off companies that have been established based on its research. More than \$200m of capital has been raised for this group of companies that span a range of fields, with 12 in medicine and 10 in engineering. We have over 200 collaborative research industry partners, over 800 student placement partners and over 5000 entrepreneurs from programs such as [INCUBATE](#) and [Genesis](#). We are a founding member of [Cicada Innovations](#) and [Uniseed](#) that both help researchers and innovators develop visionary deep tech to solve market problems, commercialise and scale high impact technologies globally. Our [Sydney Knowledge Hub](#) facilitates collaboration between academia and industry by providing a coworking space for innovative startups, non-profits and corporates seeking to collaborate with the researchers, students and facilities at the University of Sydney.

Our [Industry and Community Project Units](#) (ICPUs) have been an ambitious, large scale undergraduate program that engages groups of interdisciplinary students with leading Australian and international organisations as part of their degree. ICPUs are the University of Sydney's flagship interdisciplinary project-learning experience, designed to teach and develop graduate qualities such as critical thinking, problem-solving, cultural competency, creativity and teamwork. ICPUs have been undertaken with industries in China, Hong Kong, India, Italy and the United Kingdom. By the end of 2020, over 3500 students will have completed over 130 ICPU projects with over 60 different industry partners in six different markets. Our students are working on projects such as how we can reimagine social housing, what is the impact of artificial intelligence on the banking sector and how can the airline industry minimise disruption to its customers with partners such as NSW Tcorp, Westpac and Qantas.

ToR(f) - The quality of campus life and student freedom of expression

The University of Sydney Union (USU) contributes enormously to elevating the quality of our campus life. One of the few remaining independent, student-led organisations in Australia, USU organises clubs and societies, events and programs throughout the year. We have over 250 clubs and societies, bringing together students to celebrate their culture, indulge in a favourite food, discuss a fandom, develop a professional network and more.

The University adopted a new [Charter of Freedom of Speech and Academic Freedom](#) on 1 January 2020. The charter declares the University's commitment to freedom of speech and academic freedom as fundamental to the conduct of a democratic society and to the quest for intellectual, moral and material advance in the human condition. We affirm our institutional right and responsibility, and the rights and responsibilities of each of our scholars and students, to pursue knowledge for its own sake, wherever the pursuit might lead. The University greatly values courage, civility and respect and promotes a climate where people disagree well.⁵

ToR(g) - Foreign political interference within the NSW tertiary education sector

The following summarises some of the initiatives we have underway to manage foreign interference risks as part of an overarching strategy and framework overseen and supported by the Office of the Vice-Chancellor.

1. Development and implementation of a set of clear principles to guide University decision-makers, staff, affiliates and research students when considering engaging in collaborations with foreign entities or individuals.
2. Establishment of a **Research Risk Advisory Committee** to consider and advise decision-makers on foreign interference and national security concerns arising from research-related activities.
3. Establishment of a **Research Risk Operations Group** to identify, discuss and review relevant strategic issues and provide advice to the **Research Risk Advisory Committee** and via its members to Faculties, University Schools and Centres and their research committees.

⁵ **Note:** The University's Charter of Freedom of Speech and Academic Freedom is based on a model code for the protection of these freedoms developed by former High Court Chief Justice, the Hon Robert S. French AC, following an independent review of policies supporting freedom of speech and intellectual inquiry in Australian higher education completed in March 2019: <https://www.education.gov.au/review-university-freedom-speech>

4. Appointment of a **Manager, National Security and Export Controls** within the Research Portfolio to implement policy and processes across the University for defence trade controls/prohibited exports and to ensure staff engagement with relevant laws and guidelines.
5. Development and roll-out of face-to-face and online training for staff in high risk disciplines about national security laws and guidelines, relevant university policies, processes and support services.
6. A suite of cybersecurity projects under four streams (phishing, risk, governance and advanced threat protection) which address priority threat scenarios identified through an independent review conducted in 2019.

ToR(h) - The current levels of coordination and/or support provided to NSW universities by the NSW Government

The University collaborates closely with the NSW Government to achieve our common goal to lift state-wide productivity and improve the lives of its citizens. Through the State Government's support, we have been able to establish (or help establish with our collaborating partners) innovative and world-leading programs such as:

- [Sydney Quantum Academy](#) - an initiative of Macquarie University, UNSW Sydney, the University of Sydney and University of Technology Sydney, the Academy will help train the next generation of engineers and scientists in quantum computing, cementing Sydney's place as the leading global city for quantum technology and ensuring NSW is a world centre for jobs in the emerging quantum economy.
- [Brain and Mind Centre](#) - brings together leading scientists nationally and internationally to address critical health issues of the 21st century - disorders of the brain and mind. The Centre's work is underpinned by expertise in the four key domains of neuroscience, clinical medicine, population health and public policy. It brings together researchers, clinicians, practitioners, students and patients and their families across an extensive network of shared facilities and health precincts.
- [NSW Smart Sensing Network](#) - established through the Office of the Chief Scientist & Engineer, the initiative brings together smart sensing expertise in academia, industry and government to develop a strong, collaborative and innovative network that will deliver economic and social benefits for NSW. Project examples include the University's [Plan Jericho Smart Sensing Laboratory](#) for nano photonic sensors, where a scientific collaboration established with the RAAF has provided world-leading sensing technology that can monitor the electromagnetic space and underwater domains for Australia's defence.
- [Sydney Health Partners](#) - a partnership made up of the Sydney, Northern Sydney and Western Sydney Local Health Districts, the Sydney Children's Hospital Network (at Westmead), the University of Sydney and 10 of our affiliated medical research institutes. It seeks to address the challenges that are more important to the health system, remove or reduce the barriers to the adoption of new solutions in clinical settings and speed up the journey of the great ideas into better health outcomes.

- [NSW Public Policy Institute](#) - established last year with a \$10 million endowment from the NSW Government, as well as funding and in-kind support from the University of Sydney, the University of Technology Sydney and Western Sydney University, the Institute will transform the relationship between the University and government sectors, policymakers, industry and community, generating rigorous public policy research to achieve far-reaching benefits for the people of NSW.

The University is also deeply appreciative of the efforts of the Premier and Parliamentary Secretary Gabrielle Upton in championing a strong R&D future for NSW as critical to securing the future economic and social prosperity of the State's diverse communities. We would support the setting of clear priorities for future investment by the NSW Government in agreed strategic R&D priority areas (for example, clinical trials and other translational health and medical research, biomedicine, quantum science, artificial intelligence, robotics, data science, advanced manufacturing and agriculture, drought resilience, educational and social wellbeing outcomes and systems change) where NSW has significant potential to be competitive in Australia and globally, or faces significant challenges.

ToR(i) - The recent experience with online learning and lessons for the further development of alternative models of tertiary education service delivery

Like almost every other university in the world, the University of Sydney moved quickly to a remote learning model and we were pleased to receive very positive feedback from students on our efforts to continue to meet their educational aspirations. Our staff made an exceptional effort to support students in a moment of unprecedented crisis and students met their efforts with high levels of satisfaction. Having said that, many students - especially undergraduates - also provided feedback on the importance they attach to more regular face-to-face classes, including debate, informal Q&A, interaction with peers in testing and applying ideas, doing hands-on experiments and projects, simulation and clinical work and warm and immediate feedback from teachers. Our plan at the undergraduate level is to continue to offer rich resources online and pursue a model of face-to-face teaching for those more interactive educational activities for which it gives greatest benefit.

At the post-graduate level, we have been developing online and blended teaching strategies for some time as we are aware that more mature, often working, learners appreciate more flexible learning models. However, they too greatly value brief, intensive opportunities for face-to-face interaction with peers and teachers as they tackle the authentic, richly contextualised problems facing contemporary workplaces and professional settings that are a hallmark of our courses.

ToR(j) - The appropriateness of current NSW legislation regulating, overseeing and enabling tertiary education

The University notes that while its enabling Act is an instrument of the NSW Parliament, most legislation governing its activities is made by the Federal Parliament, while most of the funding it receives from public sources currently emanates from Federal Government agencies. The advent of the National Cabinet is a positive and productive move, and the University would support more collaboration between the state and federal governments regarding tertiary education and other areas such as health service delivery and research where there are currently many overlaps and shared responsibilities.

ToR(k) - Any other related matters

None.

A university serving NSW

