# SUBMISSION TO DEFENCE STRATEGIC REVIEW 2022

30 October 2022

## EXECUTIVE SUMMARY

Australia is at a critical juncture. Skill shortages, economic uncertainty, geopolitical tensions, and the onset of a new industrial revolution are collectively changing the domestic and global landscapes in which Australia operates. At Universities Australia, we understand that the Defence Strategic Review is driven by an intensifying sense of strategic urgency, based on a collective assessment that the challenges facing Australia threaten our national security.
This is being driven by the rapidly evolving threats in the Indo Pacific and, more specifically, by foreign powers intent on disrupting the post-WWII rules-based international order which underpins Australia's values and interests.

At a time when Australia's Defence ecosystem is facing some of the most daunting security challenges of the last century – when the need to rapidly increase capability has become critical – it has also become very difficult to find skilled workers. At the same time, the cost of Defence equipment is increasing, and the new Australian Government is dealing with major economic challenges.

Combined, these challenges amount to a wicked problem that resists simple solutions, but nonetheless needs to be addressed with urgency.

This submission demonstrates that Australia's universities are positioned to work with Defence in addressing these challenges. The research conducted across Australia's 39 universities in the Defence space is already significant, and forms a strong basis for continued expansion in terms of existing programs, new research areas, and also the ongoing development of the research workforce.

Given the proliferation of existing work occurring in the research space, in this submission we focus on how universities and Defence could work together in new and different ways to address the workforce challenges that will underpin every other challenge Defence faces in the coming decades.

**Part 1** shows the multiple ways in which Australia's universities already help solve problems the nation faces in the defence space, a) through research on weaponry and military systems, cultures and languages, and systems design and management; b) by producing workers trained to think about defence-specific problems; and c) because universities' international linkages are a valuable source of soft power and public diplomacy in our region and beyond.

However, universities are also uniquely positioned to help with Defence's broader workforce challenges, particularly around the ability to mobilise capability at speed.

**Part 2,** therefore, demonstrates how universities and Defence could work together to better meet national priorities. While noting that the higher education system in Australia constrains universities on the number of places they can offer, Part 2 considers new ways for Defence to support the creation of university places and programs for a range of positive outcomes, including:

- working with the Government to increase the number of university places available in areas of Defence need,
- expanding the Defence University Sponsorship (DUS) Program to sponsor individual students to study a full Defence-relevant degree (rather than having them apply after one year) at any Australian university,

- working with universities to expand the Defence Work Experience Program to include more substantial internships and Work Integrated Learning experiences,
- opening up certain currently protected internships and roles to international students and graduates, and
- upskilling Defence staff by facilitating greater partnerships with universities.

Part 2 also considers new roles for regional universities, which often have the physical space to build larger scale research and learning facilities that would support Defence's needs. And it explores the possibility of a new type of coordination mechanism between universities and Defence, a trusted partnership that brings us closer together. There are examples of such trusted partnerships working well in other contexts, such as the Universities Foreign Interference Taskforce (UFIT) which has created a partnership between the university sector and relevant Government agencies to counter foreign interference on Australian university campuses. A trusted partnership between universities and the Defence ecosystem could provide a useful mechanism for understanding the existing capabilities and emerging needs in both sectors. It would also help each sector to better understand the conditions the other sector is operating within, so that problems can be tackled in ways that maximise the opportunities for success.

**Part 3** outlines practical suggestions about changes to current Defence operations that would increase universities' capacity to meet the nation's defence needs. These suggestions centre around two core ideas:

1. Determining Defence's capability needs across the Defence ecosystem and helping develop a coordination mechanism that could best communicate those needs to universities.
2. Conducting a broad and deep analysis of Defence's workforce needs across the full Defence ecosystem, to send the most accurate demand signal to universities and prospective students.

Discussions of military capability often focus on how to acquire, maintain and deploy the *equipment* best suited to defending our nation in this changing geopolitical landscape. While this is undoubtedly important, this submission argues that another aspect of capability should also be a focus for this review – the *people* who constitute the current and future Defence ecosystem. These people are the new Defence recruits who increasingly need a university degree to work at the required level of technical ability. They are the postgraduate researchers dedicating their lives to innovation. They are the mid- and later-career engineers, health professionals, political experts, linguists and strategists that enable Defence to achieve its core mission and function effectively.

For more information about this submission and the role universities can play in meeting defence needs, please contact Deputy Chief Executive Peter Chesworth at p.chesworth@universitiesaustralia.edu.au.

### SUMMARY OF KEY TAKEAWAYS

- Australian universities recognise Defence's struggle to secure a workforce capable of meeting current and future security challenges.
- Military capability is often looked at through the prism of acquiring, maintaining, and deploying equipment. People are equally important, and Defence personnel will increasingly require higher education qualifications to perform their roles.
- Universities are uniquely positioned to contribute to Defence's broad workforce challenges. Universities produce knowledge workers with the capability to teach themselves new skills throughout their careers, because their university education has taught them not only how to do specific things, but how to learn. These are exactly the kinds of people needed to contribute to the changing Defence landscape.
- Universities already work closely with Defence on a range of challenges, especially in the research space, but there are new opportunities that are yet to be explored.

## SUMMARY OF RECOMMENDATIONS

**Part 1: Current contributions of universities to Defence needs**

Defence and universities could:

- Take stock of existing ways that the Defence ecosystem works with, and benefits from, the work of Australian universities, to maximise outcomes.

**Part 2: How universities and Defence could work together to better meet national priorities in the future**

The Government could:

- Consider new ways to fund university places and programs, including:
  - Broadening the scope of sponsorship for individual students to study at an Australian university, then work for Defence or an associated entity.
  - Opening up internships and roles that are currently unable to recruit international students, so that students from our allied countries could apply, boosting the critical mass and viability of specialist learnings.
  - Partnering with universities to create pathway programs that would facilitate undergraduate study by high school entrants, as well as by current personnel looking to get their first degree, who don't currently meet the eligibility criteria for university entrance.
  - Partnering with universities to upskill the existing graduate Defence workforce
- Consider mechanisms to boost research partnerships between Defence and regional universities.

**Part 3: What Defence could do to help universities help Defence**

Defence could:

- Work with universities to create and facilitate a Defence-university coordination mechanism, which may, in time, also include other areas of Government.
- Undertake a broad and inclusive workforce analysis that would:
  - elevate the analysis of present and future workforce demand – ADF, APS and defence industry to an order of priority – a workforce pillar – in the development of any new Defence capability and sustainment proposals.
  - allow better linkages to be established between what Defence needs and what the suppliers of teaching can provide, by including universities and TAFE in the process of analysis, and at an early stage of the process.
  - extend these workforce planning principles to those areas of the Defence complex which are not program related. This potentially extends skills demand to areas beyond STEM and into the humanities, arts and social sciences, including, but not limited to, languages, cultural studies, strategic and security studies, law and ethics.
  - be updated annually to send the clearest signal of current and projected workforce requirements to providers of teaching – universities and TAFE.
  - plan out into the medium- and long-term.

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# INTRODUCTION

As the peak body for Australia's 39 comprehensive universities, Universities Australia welcomes the opportunity to contribute to the Defence Strategic Review 2022 (the review). In this submission, we lay out the role that Australia's universities currently play, and the various roles they could play in the future of the nation's defence capability.

Australia faces unique challenges right now, needing to prepare for a range of possible adverse geopolitical outcomes while also facing skills shortages across most industries, rising inflation, and competing priorities such as combating climate change.

What this means is that, at a time when Defence is faced with some of the most pressing security challenges of the last century – when the need to rapidly increase capability has become critical – it has also become very difficult to find appropriate staff, the cost of defence equipment is increasing, and the new Australian Government is dealing with major economic challenges.

Combined, these challenges amount to a wicked problem that resists simple solutions, but nonetheless needs to be addressed with urgency.

This submission demonstrates that Australia's universities are positioned to work with Defence in addressing those challenges in the national interest. It begins from a premise that Defence is already aware of the critical research partnerships between Defence and universities. But the challenges are broader than the existing partnerships account for. Therefore, this submission amplifies some of the less obvious areas in which Defence and universities could work together on solving wicked problems, particularly in the area of workforce development.

There are three parts to this submission:

**Part 1** outlines the current ways that universities work with Defence to meet the nation's needs.

**Part 2** considers how universities and Defence could work together more effectively to meet those needs.

**Part 3** explores areas that Defence could consider adapting internally to maximise the opportunities for universities to help them meet the nation's challenges.

We have also included an Appendix that provides a brief overview of university operations, for the purposes of illuminating an area that may have been opaque to Defence previously.

For further information about any of the considerations raised in this submission, please don't hesitate to contact Peter Chesworth, Deputy Chief Executive of Universities Australia, at p.chesworth@universitiesaustralia.edu.au.

# SUMMARY OF PART 1: CURRENT CONTRIBUTIONS OF UNIVERSITIES TO DEFENCE NEEDS

- Universities are committed to international engagement to maintain stability, security and sovereignty in the Indo Pacific.
- Australia's 39 universities perform extensive soft diplomacy, with nearly 10,000 formal research and student exchange agreements with higher education institutions abroad.
- International student graduates form an invaluable worldwide alumni network with an understanding of, and appreciation for Australia, our system of government, and our values.
- Foreign direct investment in Australian university research helps build relationships with our allies.
- Universities take issues of national security seriously. For example, we have partnered with a range of Federal Government departments (through the University Foreign Interference Taskforce) to help manage issues of foreign interference on campus. Universities Australia is part of a Strategic Dialogue with counterpart organisations from Canada, Germany, New Zealand, the United Kingdom and the United States to share unsecured intelligence on national security risks pertinent to the university sector.
- The research that universities produce about our region helps to build mutual understanding, helping develop lasting relationships between individuals and nations.
- Australia's comprehensive universities also undertake research across a wide range of other disciplines. This makes them well placed to contribute insights and new technologies across the full range of fundamental inputs to capability.
- The Australian Defence Force Academy (ADFA) is well placed to supply Defence with the kinds of employees it needs. However, ADFA can only graduate a few hundred students per year. Even under current arrangements, graduates from other universities are essential to meeting demand, and that's before taking into account the plan to boost Defence by a minimum of 18,500 new staff over the next 20 years.
- Humanities and Social Science programs are critical to producing graduates for the Defence workforce and should be considered of equal importance as STEM programs.
- The DSTG University Partnerships Program is a valuable starting point for an ongoing Defence/university sector relationship. However, to meet Defence's very broad workforce needs, these relationships will need to develop far beyond those existing with DSTG.

# PART 1: CURRENT CONTRIBUTIONS OF UNIVERSITIES TO DEFENCE NEEDS

## 1.1 SHAPING AUSTRALIA'S STRATEGIC ENVIRONMENT: UNIVERSITY ACTIVITY AS SOFT DIPLOMACY

> **In order to achieve the Defence Mission, Defence's strategic objectives are to shape Australia's strategic environment, deter actions against our interests and, when required, respond with credible force.**
>
> **- 2020 Defence Strategic Update**

The 2020 Defence Strategic Update makes a compelling argument for why international engagement is key to the stability, security, and sovereignty of our region. But building Australia's partnerships and influence in the Indo Pacific is not just a Defence objective – it is also a central goal of Australia's university sector.

Universities have embraced globalisation in ways many other Australian industries haven't. From the institutional level down to individual academics and students, the linkages between Australian universities and their foreign counterparts, as well as with other organisations and individuals around the world, are vast and enduring.

In educating our future regional leaders, helping to educate an increasingly internationally focused domestic workforce, and contributing to the global research effort, our universities help shape Australia's strategic environment.

This section outlines the existing ways that universities help to meet challenges in areas of national need in the defence space. These existing measures could be maximised by Defence for optimal outcomes.

### 1.1.1 AUSTRALIAN UNIVERSITIES AS INTRINSIC GLOBAL ENTITIES

#### University-to-university relationships across national borders

Over the last 10 years, the number of formal relationships between Australia's 39 universities and higher education institutions abroad has nearly doubled to almost 10,000 agreements.[1] This encompasses study abroad and student exchange programs, formal research collaborations, academic and non-academic staff exchanges and transnational education activities. These agreements extend to all continents and continue to expand, through the efforts of individual universities as well as with support from the Australian Government.

Institution-to-institution agreements play a significant role in strengthening Australia's soft power by creating global links and facilitating student mobility.

[1] From 5,554 in 2009 to 9,820 in 2020. Universities Australia International Links Data 2020.

## The value of global alumni networks

Australia has become one of the world's most popular international study destinations, third only to the United States and the United Kingdom.[2]

However, higher education generates more than just an economic return for Australia. A mature international student base fosters the reciprocity of ideas across national borders, deepens cross-cultural understanding and creates people-to-people connections. Activities such as the New Colombo Plan, the Australia Awards and the Global Alumni Strategy provide opportunities to continue to develop the connection between alumni and Australia, well beyond the period of study. But the value of these ideas and connections isn't contained to the university sector. These students go on to become thought leaders across every sector and industry within their home countries, and potential ambassadors for the Australian way of life. This has obvious benefits for Australia's national security.

## Connections between universities and foreign investors

Universities also maintain international relationships with other industries. The Australian Research Council's Linkage Program, for example, promotes national and international research partnerships between university researchers and business, industry, community organisations and other publicly funded research agencies. Many universities maintain their own relationships with international organisations, collaborating on research and development, sharing best practice, and building people-to-people relationships.

This in turn means that our allies can have both a financial and ideological vested interest in our research outcomes – a scenario that is mutually beneficial.

### Case study – Australia-Japan Innovation Alliance Forum

Australia and Japan have a large and enduring economic relationship built on trust, shared values, and economic similarities. Our scientific and technological strengths are also complementary, but neither country is currently a top-of-mind innovation partner for the other.

In October 2022, the Australia Japan Business Cooperation Committee brought Australian universities with Japanese industry leaders together to explore how Australian research can be translated and commercialised for the good of both countries.

Australia is currently Japan's top export market for coal and gas. This forum allowed industry and university leaders to focus on clean energy technologies that would allow our countries to continue their strong trade arrangements while also helping both nations meet their net zero targets. The increasingly strong start-up culture in Australia's universities will be key to developing solutions in this space.

The strong relationships between Australian universities and international industry investors may potentially present new opportunities for Defence to coordinate with universities in these collaborations.

[2] According to research conducted by education agents IDP in 2021.

### 1.1.2 THE ROLE OF UNIVERSITIES IN COUNTERING FOREIGN INTERFERENCE

Universities are globally connected organisations with student and staff networks across the globe. This openness to the world ensures an international exchange of ideas crucial to Australia's economic and social prosperity.

It is safe to assume that a high proportion of Australia's security establishment were initially educated at universities, continue their learning at universities, and give their knowledge and research back through universities.

Universities and Government acknowledge that this crucial global engagement occurs in an increasingly complex world. Over the past few years, a more formal approach has been put in place to enhance safeguards while also ensuring we preserve that openness that is a defining factor in the world-class performance and reputation of Australia's university system.

Universities and Government know that a robust and trusted system of international collaborations is one in which risks are managed and benefits realised.

One example where universities and Government have worked together in partnership to manage these risks and realise these benefits is in the creation of the University Foreign Interference Taskforce (UFIT). UFIT is a partnership between the university sector and Government to enhance the safeguards against the risk of foreign interference in Australian universities while continuing to value and nurture vital global engagement formed through the open nature of our universities.

Another example is in the creation of the Strategic Dialogue working group. Universities Australia meets regularly with counterpart organisations from Canada, Germany, New Zealand, the United Kingdom and the United States to share best practice and stay ahead of the game on matters of foreign interference and, occasionally, other national security risks pertinent to the university sector. The working group has published a joint statement of intent on collaborating to support safe, secure and sustainable internationalisation. The statement demonstrates a commitment to continual maturing of risk management processes, recognising that international collaborations may carry risk, and may sometimes raise legitimate national security considerations.[3]

The work undertaken by universities before and following the establishment of UFIT and the Strategic Dialogue working group demonstrates that the sector is alert to the opportunities and risks in a global context, and that universities continue to update and improve their risk management systems. These measures allow the sector to continue enhancing the international relationships that support and strengthen Australia's global status.

### 1.1.3 HOW RESEARCH (COMBINED WITH PUBLIC OUTREACH) ABOUT OUR REGION MAKES OUR REGION SAFER

The goal of regional studies research is to understand how and why regions and cities evolve the way they do. This kind of knowledge is critical for Defence experts in understanding (and therefore effectively shaping) our region.

Furthermore, when the results and insights are effectively communicated beyond the academic community, research about our region helps to shape national perceptions of our neighbours and our role in the region.

[3] See the Universities Australia website: Statement of intent re Collaborating to support safe, secure, and sustainable internationalisation. https://www.universitiesaustralia.edu.au/policy-submissions/international/joint-statement-from-convening-higher-education-associations/.

As a recent Sydney Morning Herald article (co-authored by two Australian academics, Professor Joanne Wallis from the University of Adelaide, and Professor Ian Kemish from the University of Queensland) demonstrated:

> *The most effective and enduring way to improve Australia's relations in the Pacific isn't through spending announcements or infrastructure projects. It is through relationships between Australian and Pacific people, civil society groups, educational institutions, sporting codes and businesses.*
>
> *Strong relationships require mutual understanding. And this is something that would benefit from more development – especially on the Australian side. Greater understanding of the Pacific will also aid the Australian public's receptivity of the government's policies.*[4]

**Case study: Dr Tess Newton Cain, Senior Research Fellow and Project Leader for the Griffith Asia Institute's Pacific Hub | Griffith University, Queensland.**

With a PhD in Law and Criminology, Dr Tess Newton Cain's research focuses on politics, geopolitics and policy development in the Pacific Islands region. Her research forms a sound, rigorous evidence base where she provides strategic advice and policy support to national governments (including the governments of Australia and New Zealand), regional organisations (including the Pacific Islands Forum Secretariat) and development partners (including the World Bank, the Asian Development Bank, and the United Nations).

Her research and expertise are shared more broadly when she engages with the broader public in Australia and across the Pacific Islands, regularly providing expert commentary on Pacific issues in the media and helping to curate the Pacific Outlook section of the Griffith Asia Insights Blog.

The research that universities produce about our region helps to build that mutual understanding, providing a platform from which positive relationships between individuals and nations can be built.

### 1.1.4 THE VALUE OF HUMANITIES AND SOCIAL SCIENCE PROGRAMS FOR BUILDING MUTUAL UNDERSTANDING

Universities don't just teach skills, at least not in the sense that the term has come to be used. That is to say, they don't just teach people how to *do* things. Universities teach people how to *think* – to think differently, laterally, innovatively, and strategically. Universities produce knowledge workers with the capability to teach *themselves* skills, because their university education has taught them how to learn, and how to continue learning throughout their lives. These are exactly the kinds of people needed to contribute to the changing Defence landscape.

It would be easy to narrowly imagine Defence expertise as coming from STEM fields, but in fact, the Humanities and Social Sciences currently provide Defence with graduates possessing a range of knowledges and abilities. Here, we will highlight just three: Cultural Studies, Language Studies, and Security and Strategic Studies.

[4] Wallis, Joanne, and Ian Kemish. 2022. "Key to Pacific Relationship Is Education: Ours, Not Theirs." The Sydney Morning Herald, August 9, 2022, sec. Pacific Diplomacy. https://www.smh.com.au/world/oceania/key-to-pacific-relationship-is-education-ours-not-theirs-20220809-p5b8h9.html.

## Cultural Studies

A degree in Cultural Studies gives students an understanding of how different cultures see the world, and how those worldviews can cause tensions and conflict. The teaching in a program like Cultural Studies helps students understand different ethical frameworks and how they interact with national or ethnic culture. Students learn to question what constitutes right and wrong across different cultures, the universality of human rights and social justice, the role and externalities of social movements, and the interaction between the nation-state and the individual.

## Language Studies

Learning a language at the university level goes far beyond the skills of reading, writing, speaking and listening. Understanding a language plays a huge role in understanding a culture and doing a language degree typically offers opportunities for students to enhance their burgeoning cultural understanding by undertaking a study abroad program. Beyond the program itself, learning a language trains your brain to adapt to new contexts, improves memory and increases discipline – all soft skills used in the military.

Defence recognises the value of language studies already, given the existence of the Defence Force School of Languages (DFSL) in Victoria, which specialises in language for strategic and operational engagement, as well as military communication skills and joint tactical interactions. The number of Defence personnel with intermediate and advanced language skills in Indo Pacific languages was increased following the 2016 Defence White Paper. However, as the DFSL points out, language capability requires a long-term strategy given that language acquisition takes several years in most cases. University graduates from language studies programs could help fill positions in Defence's ranks.

### A LOTE (Languages Other Than English) Capability for Defence

- "We need a mindset that doesn't expect everyone we deal with to speak our language.
- We need a mindset that is hungry to know what we have missed out on because we don't speak our host's language or know their culture.
- We need a mindset that is not biased *towards* understanding technical capability, *against* understanding the people capability.
- We need a mindset that respects our partners – the greatest respect we can show our partners is to speak their language and show knowledge of their cultural practices."

– *Wing Commander Paul Deighton, 2017, Presentation on the DFSL*

## Security and Strategic Studies

Often located within Arts or Regional Studies faculties, degrees in Security Studies prepare students to respond to shocks, challenges, and risks across a broad range of areas, including:

- biosecurity,
- ecosecurity,
- regional security,
- food security,
- infosecurity,

- the risks and ethics behind new technologies like Quantum and AI, and
- issues related to human rights, migration and global mobility.

This is in addition to defence-specific areas such as:

- political violence, terrorism and other grey zone activities,
- civil war,
- cybercrime, and
- traditional and emerging military threats.

Security and Strategic Studies degrees teach students how to think about complex, unbounded problems in creative, out-of-the-box ways. They give them sophisticated tools for how to *think strategically* about conflict and peace, taking into account international politics, geostrategy, international diplomacy, international economics and military power.

## 1.2 BUILDING DEFENCE CAPABILITY

**The military and civilian personnel of the Defence and Australian Signals Directorate workforce are the most important capability for the defence of Australia and its national interests, and the investments outlined in this document will require a highly-skilled workforce to deliver them.**

**- Force Structure Plan 2020**

### 1.2.1 UNIVERSITY DEGREES HELP CREATE AND DEVELOP DEFENCE PERSONNEL

Universities help to produce personnel across the entire Defence workforce, including members of the ADF, the ADF Reserves, the Australian Public Service (APS), as well as contractors employed in defence industry. As a specialist provider, the Australian Defence Force Academy (ADFA) is evidently very well placed to supply Defence with the kinds of employees they need. However, ADFA can only graduate a few hundred students per year. Even under current arrangements, graduates from other universities are essential to meeting demand, and that's before taking into account the plan to boost Defence by a minimum of 18,500 new staff over the next twenty years.

Universities are in a strong position to produce graduates across the very broad range of Defence's workforce needs. From defence policy to diplomacy, strategy development, and risk management; from science and technology research to health services, legal, HR and ICT management and coordination; from intelligence gathering and analysis, to financial management – each of Australia's comprehensive universities provide world-class programs across many disciplines.[5]

Most Australian universities are part of the Defence Science and Technology Group's (DSTG) University Partnerships program, which could facilitate ongoing dialogue between Defence and universities over the long term. This is a valuable starting point for an ongoing Defence/university

[5] A comprehensive university (a) incorporates programs with an emphasis on 'professional applicability and vocational effectiveness", as well as programs with a more theoretical or philosophical leaning, (b) includes diploma through to postgraduate level study, and (c) incorporates substantial and high-quality research activities, including research-focused postgraduate degrees.

- Mahony, David. "The Rise of the Australian Comprehensive University." Higher Education Research & Development 9, no. 1 (January 1, 1990): 7–20. https://doi.org/10.1080/0729436900090102.

sector relationship. However, to meet Defence's very broad workforce needs, these relationships will need to develop far beyond those existing with DSTG.

**Universities produce many of the top-level professionals that fuel the Defence workforce.**

- Allied health professionals
- Business and governance specialists
- Cyber analysts
- Dentists
- Doctors
- Educators
- Engineers
- Ethicists, Philosophers and Strategists
- Intelligence analysts
- HR specialists
- Lawyers
- Linguists
- Logistics managers
- Nurses
- Ophthalmologists
- Pathologists
- Pharmacists
- Policy specialists
- Psychiatrists
- Psychologists
- Radiographers
- Scientists across a range of subdisciplines
- Social scientists across a range of subdisciplines
- Amongst many others…

– Defencejobs.gov.au 2022

### 1.2.2 UNIVERSITY RESEARCH HELPS FUEL THE FUNDAMENTAL INPUTS TO CAPABILITY – ESPECIALLY IN TIMES OF NATIONAL NEED

As is the case with their teaching programs, Australia's comprehensive universities also undertake research across a wide range of disciplines. This makes them well placed to contribute insights and new technologies across the full range of fundamental inputs to capability.

Because of this, universities are also a valuable resource for the nation in a time of crisis. For example, when COVID-19 was declared a global pandemic in early 2020, Australian universities immediately turned their collective attention to dealing with the many and varied consequences of this global challenge. Importantly, the research efforts went far beyond the obvious work of Health faculties in developing testing regimes, vaccines and treatments (as critical as these innovations were) and/or supplying clinical personnel to support treatment and vaccine delivery.

The advantage for the Government in working with universities in responding to this lengthy and ongoing challenge was that only universities were able to provide the breadth of response needed, thanks to their comprehensive and diverse faculty structures. From Economics and Technology faculties to Psychology, Legal Studies, Communications, Ethics and Philosophy departments, universities were able to coordinate their efforts across different disciplines, work together with other universities to pool resources and exchange ideas, and provide Government with advice and

solutions that ranged from new technologies through to analyses of the impacts of the pandemic on society, both via the RRIF (the Rapid Research Information Forum)[6] and through other mechanisms.

Obviously, universities have many purposes (see Appendix A), and therefore they continued to undertake a lot of other work in addition to their pandemic-related efforts during this time, including teaching the next generation of highly skilled professionals that Australia needs to fuel our workforce over the coming decades. But the pandemic did provide a valuable insight into how universities can collectively contribute during a crisis.

### Case study: Defence meets Bush Uni

Bush Uni, a 10-week course run by Macquarie University based in Wuyagiba near south-east Arnhem Land, offers Indigenous students a pathway to university education. Bush Uni, which is supported by the nearby communities of Ngukurr and Numbulwar, invited Defence to engage with students about career opportunities in Defence and how Defence and Indigenous communities could better engage.

Three ADF members visited Bush Uni during Learning Journeys Week in November 2020, at which students could meet role models from civilian, Northern Territory Government and Federal Government workforces.

Engagements like this provide students from remote communities with opportunities to ask questions and talk to people with common lived experiences who have joined the Defence force. This is a highly valuable activity for Defence, given that the North-West Mobile Force (Norforce) that patrols the Top End is predominantly an Indigenous unit.

[6] The Rapid Research Information Forum (RRIF) was initiated in 2020 as a forum for rapid information sharing and collaboration within the Australian research and innovation sector. provided a mechanism to rapidly bring together relevant multidisciplinary research expertise to address pressing questions about Australia's response to COVID-19, as they emerged. See more on the RRIF and the new RRI Reports process here: https://www.chiefscientist.gov.au/RRIF

# SUMMARY OF PART 2: HOW UNIVERSITIES AND DEFENCE COULD WORK TOGETHER TO BETTER MEET NATIONAL PRIORITIES IN THE FUTURE

- To better liaise with and communicate workforce needs to universities, a Defence-universities co-ordination mechanism could build on the existing DSTG University Partnerships program, or be created as a complementary entity, leveraging the networks that have been developed through the University Partnerships program.
- To help with workforce supply, Defence could consider:
  - working with the Government to increase the number of undergraduate places available in universities.
  - broadening the scope of sponsorship for individual students to study at an Australian university, then commit to a period of service in Defence after graduation.
  - working with universities to expand the existing Defence Work Experience Program to provide a broader range of more extensive internships and Work Integrated Learning experiences.
  - opening up currently restricted internships and roles to the 100,000+ international students from allied countries studying in Australia.
- To upskill the existing Defence workforce, Defence could consider:
  - Partnering with universities to promote pathway programs for Australians (both those currently working for Defence and potential future employees) to upskill by transitioning into university study via an alternative pathway, even if they have not previously studied at university, and do not meet direct entry requirements for university programs.
  - Partnering with universities to upskill the graduate Defence workforce via microcredentials, full degree programs and by working with the APS Academy.
- To enhance Defence/university research collaborations, Defence could consider:
  - Streamlining and optimising the research relationships between Defence and universities and creating a strategic approach to university research funding and security.
  - Enhancing mechanisms to boost research partnerships between Defence and regional universities.

# PART 2: HOW UNIVERSITIES AND DEFENCE COULD WORK TOGETHER TO BETTER MEET NATIONAL PRIORITIES IN THE FUTURE

## 2.1 CREATE A DEFENCE-UNIVERSITY COORDINATION MECHANISM

Universities are well positioned to work collaboratively with Defence as solutions-focused partners. These relationships do already exist, for example in the form of the Australian Defence Science and Universities Network (ADSUN) and its various state-based counterparts, coordinated by the Defence Science and Technology Group. However, the issues Defence faces over the coming two decades will expand beyond the scope of science and technology research. The creation of a mechanism would allow Defence to coordinate with universities across this broader range of areas, while also remaining agile enough to respond to emerging challenges and opportunities.

As previously discussed, similar partnerships such as the UFIT already exist and have operated to the benefit of both universities and the Australian public.

**Case study: UFIT as a partnership between universities and other stakeholders**

The University Foreign Interference Taskforce (UFIT) is a partnership between the university sector and a range of Government stakeholders from different agencies. The aim of the taskforce is to raise awareness and put frameworks in place to manage more complex risks whilst continuing to value and nurture the kinds of vital global engagement that occur every day at universities.

The partnership has produced two iterations of the *Guidelines to Counter Foreign Interference in the Australian University Sector*, demonstrating the maturing of the university sector in identifying and mitigating risk.

The work undertaken by universities and Government under the UFIT partnership is world leading. Indeed, the Australian Guidelines have been used as a model for the approach adopted by some other like-minded countries.

See 1.1.2 for more on this.

There is scope for universities' involvement in almost every aspect of the work undertaken by Defence, including:

- conflict management, prevention and deterrence,
- recovery and reconciliation efforts,
- delivery of humanitarian aid,
- research and innovation, and
- disaster preparedness and response.

All of this work could be coordinated through a formal Defence-universities coordination mechanism, bringing together strategic planning personnel from each branch of the service with university representatives. It would also, of course, be critical that any mechanism created was aligned with

and had input from existing or emerging coordination mechanisms. For example, with the new Government's proposal of an Australian DARPA model, it would be essential that the new Australian Strategic Research Agency worked closely with this mechanism, along with DSTG and Defence Projects, to ensure continued strategic alignment.

## 2.2 CONSIDER NEW WAYS TO CONTRIBUTE TO UNIVERSITY PLACES AND PROGRAMS

This section outlines some examples of the ways in which university partnerships could be utilised to better meet Defence's workforce needs and the country's national priorities.

### 2.2.1 WORK WITH THE GOVERNMENT TO SPONSOR NEW UNIVERSITY UNDERGRADUATE PLACES

It's important to understand current areas of constraint for universities in providing new study places for undergraduate students. In Australia, the Federal Government provides the funding to public universities to offer places to domestic students in bachelor degree programs. The legislation that governs this is the Higher Education Support Act 2003 (HESA). Under HESA, it is illegal for public universities to offer places to undergraduates outside of this Commonwealth funding scheme.

What this means is that, although universities can choose how to distribute their allocated funding for places amongst different programs, they can't offer *more* places to students than their allocated government funding allows.

The Minister for Education can expand the amount of funding provided to a university, and can allocate additional places to specific programs of study.[7]

If Defence was interested in sponsoring a number of places in areas of particular defence need, it may be possible to do so by providing financial support to the Department of Education, and working in partnership with both the higher education sector and the Government more broadly to identify which universities would be willing to offer these additional places.

A measure like this could be offered in conjunction with the suggestion at 2.2.2 to help ensure that the students who studied in these places were most likely to then take up employment opportunities in Defence.

For more detail on the operations of Australia's higher education system, please see Appendix A.

### 2.2.2 BROADEN THE SCOPE OF SPONSORSHIP FOR INDIVIDUAL STUDENTS TO STUDY AT AN AUSTRALIAN UNIVERSITY, THEN WORK IN DEFENCE

The ADF currently offers multiple pathways for students to have some or all of the cost of their degree covered where the student commits to a period of service after graduation.

For example, students studying at ADFA have their entire degree paid for. Through the University of New South Wales, ADFA students can study degrees across a range of fields that will lead to permanent positions in the Defence Force after graduation. Students studying through ADFA are also able to earn while they learn. However, it's preferred that students apply when they are in year 11. For many students, this is before they are ready to decide what path they wish to take beyond their schooling. In an environment where Defence is looking for more recruits, this preference may

[7] See the Higher Education Support Act 2003, Subdivision 30-B—Allocation of places, and Subdivision 30-C—Funding agreements: https://www.legislation.gov.au/Details/C2022C00005

be sending adverse signals to students about their chances of getting into ADFA, which may put them off applying.

Students who have joined Defence are also able to have part of the cost of their degree covered by applying for Defence University Sponsorship (DUS) of their program after one year of study. Currently, there are a limited number of programs that qualify for DUS, and students must have undertaken at least one full semester study load to be eligible for the program. There are also limitations placed on the amount of funding that is covered by the DUS. For undergraduate students, Defence will cover up to $10,000 per year based on the HELP equivalent amount. For postgraduate students, the amount covered is the HELP-equivalent of the cost of the degree. Students undertaking double degrees may only have the cost of eligible units covered.[8]

Expanding the DUS program to allow students wishing to undertake any eligible course to apply at any point in or prior to their studies could open greater recruitment pathways for Defence by attracting students with a wider range of further education interests than are currently offered.

Another existing pathway involves a range of scholarships and internships provided by DSTG. These programs receive a great number of applications but can only support some of these. Expanding programs like this to be able to support the placement of more applicants would by nature expand the opportunities for domestic students to engage with Defence.

As this section has shown, there are opportunities here for partnerships with universities to attract students into Defence. For example, a process could be established by which universities apply to have the cost of a certain number of their full-fee paying places covered by Defence. Students whose program fees were covered by Defence would of course be required to undertake a period of service within a branch of the services, in line with the current policy settings under the DUS program.

It is, of course, one thing for universities to provide places for students to take the kinds of programs Defence has a need for, and a different thing whether students choose to fill those places. These decisions are largely out of universities' control, with initial perceptions of particular career pathways often being formed at primary and high school level. For this reason, it may be advantageous that Defence is planning to talk to high school aged students in their upcoming recruitment drive.[9]

### 2.2.3 OFFER INTERNSHIPS AND OTHER WORK INTEGRATED LEARNING OPPORTUNITIES TO EXISTING UNIVERSITY STUDENTS

The previous sections have explored ways to encourage more potential students to enter study programs related to Defence's needs. However, in a given year there are typically more than one million domestic undergraduate and postgraduate students studying in Australian universities,[10] and these existing students should also be of interest in helping to expand the Defence workforce.

One way to encourage more existing students to enter the Defence workforce upon graduation is to offer paid or unpaid internships and other Work Integrated Learning (WIL) opportunities.

Internships and WIL opportunities allow students to get an insider's view of an organisation while they are still studying – a kind of 'try before you buy' scenario, that also allows them to gain valuable work experience. This is a critical recruitment mechanism for multinational consultancy firms like

[8] With the exception of the Graduate Medical and Dental Program, which Defence say is assessed on a case-by-case basis.

[9] Packham, Ben. "Defence 'faces Uphill Battle", 2022. https://www.theaustralian.com.au/nation/defence/defence-faces-uphill-battle-to-find-and-retain-skilled-personnel-for-advanced-capabilities/news-story/73e4222309ac321123e6206550c7259f.

[10] In 2020, there were 1,047,330 domestic students studying in Australian universities at the bachelor, postgraduate by coursework, and postgraduate by research level. See Department of Education, 2022, Student Enrolments Pivot Table, https://www.education.gov.au/higher-education-statistics/resources/student-enrolments-pivot-table.

KPMG and EY, who offer highly competitive internships lasting between four and 12 weeks. They then use these opportunities to funnel the best interns into full-time grad programs.

Universities increasingly offer internships and WIL opportunities incorporated into their study offerings. Consequently, universities are constantly searching for more internship opportunities to offer their students.

Defence does currently have a Work Experience Program, which allows "young Australians interested in Defence as a future career the opportunity to sample life in Defence and learn more about the Australian Defence Force (ADF) and the Australian Public Service (APS)".[11] However, as of time of writing, there are only 5 types of work experience opportunities available, all between two and five days in length, and amounting to around 170 placements in total over the next 12 months.

An expansion of this program to include longer placements in a much wider range of occupations and locations could help Defence build a pipeline of interested students with an understanding of Defence culture, as well as formative professional experience in their chosen occupation.

This is an area in which Australia's universities could work effectively with Defence to build a program that would be beneficial for all parties.

### 2.2.4 OPEN UP PROTECTED INTERNSHIPS AND ROLES

There are currently restrictions on the eligibility of international students and international graduates for entry into Defence. Generally, non-Australian citizens are ineligible for entry into Defence roles.[12]

While there are valid national security considerations to be considered, the current policy settings restrict access to a wide cross-section of the Australian university cohort and limit Defence's ability to recruit internationally, despite the rigorous existing vetting and risk mitigation procedures in place.

Universities educate over 400,000 international students annually. About a quarter of these students come from Australia's key strategic allies and Five Eyes partner countries:

| **Country** | **Security Partnership** | **International students currently enrolled in Australia (as of June 2022)** |
|---|---|---|
| India | Quad | 91,413 |
| Japan | Quad | 6,236 |
| UK | AUKUS, Five Eyes | 3,742 |
| Canada | Five Eyes | 2,959 |
| USA | AUKUS, Five Eyes, Quad | 2,853 |
| Total international students from allied countries currently studying in Australia | | 107,203 |

[11] From the Defence Work Experience Program 'Jobs List' webpage: https://defencecareers.nga.net.au/cp/index.cfm?event=jobs.listJobs&audiencetypecode=defenceworkexp

[12] Although exceptions are made in instances where the applicant is:
- a permanent resident who has applied for citizenship or will apply for citizenship after 90 days of Defence service; or
- an overseas applicant with relevant military experience.

### 2.2.5 PARTNER WITH UNIVERSITIES TO PROMOTE PATHWAYS INTO DEGREES

As the needs of a modern defence force become more technical and highly skilled, there is an increasing need for a more highly educated workforce within Defence. Whereas many roles in Defence would once have required only secondary school-level skills, those same roles have evolved to require undergraduate or post-graduate qualifications.

There is therefore a need for Defence to:

- Provide pathways for currently-serving graduate personnel to regularly update their qualifications,[13] and
- Work with universities to ensure that the alternative entry pathways they provide are visible to and attractive for people of all ages who don't yet meet the eligibility requirements for a university program, particularly in areas of Defence need.

Ensuring that the widest available cohort of Australians know that they can undertake further education that will equip them with the skills necessary to succeed in the modern Defence Force could play a crucial role in Defence's forward planning.

### 2.2.6 PARTNER WITH UNIVERSITIES TO UPSKILL THE GRADUATE DEFENCE WORKFORCE

#### University microcredentials as a way to upskill across the Defence ecosystem

Microcredentials are a rapidly expanding form of alternative qualification across a range of fields in higher education. They are small, discrete pieces of learning that can be combined with other qualifications to demonstrate knowledge, skills and competencies, which learners, employers and educational institutions can use.

Lifelong learning, where workers and learners dip back in to structured education to acquire contemporary knowledge and skills, is seen as an essential part of the modern economy, and is particularly relevant in the Defence workforce where technologies are changing at a rapid pace. Learners may access complementary education for a variety of purposes, including ongoing professional development, reskilling, pathway qualifications, just-in-time acquisition of discrete packets of skills or knowledge, or personal development.

Given the rapid pace of change in Defence-related STEM areas, microcredentials provided by universities offer a way for technical Defence personnel to stay current in their qualifications or specialise in a technical area where previously their knowledge may have been more general. Currently, when these needs are identified in Defence personnel, those employees are sent abroad to update their knowledge and skills. Australian universities are better placed than our counterparts abroad to tailor these kinds of courses to Defence's requirements.

University microcredentials would complement existing Defence training courses delivered at the Australian Defence College, as well as the training provided in the VET/TAFE environment, providing top-ups in high-level thinking and highly technical STEM areas, as well as upskilling in specific professional areas such as engineering and health. As the workforce across the Defence ecosystem expands, Australian universities, along with the VET sector, will be best placed to partner with Defence to meet these expanding needs.

[13] Pathways for currently serving graduate personnel to upskill are discussed in further detail at subsection 2.2.5.

### Partnerships between universities and the new APS Academy

The 2021 creation of the APS Academy has provided a new way for APS staff, including those in the Department of Defence, to update their skills, tools and knowledge. One of the core operating principles of the APS Academy is to work with external partners to leverage research, expertise and learning and development offerings for the APS. While it makes sense for some of the APS Crafts be taught by APS practitioners (such as the Working in Government Craft category), others would work well as university microcredentials, or even full degree programs, which can be designed in partnership with universities to cater specifically for the APS context.

These kinds of partnerships are already being sought by the APS Academy. However, there are opportunities for the Department of Defence to seek more specialised microcredentials and programs that would help to upskill APS staff in areas more specific to Defence.

#### Case study: QUT's APS Public Sector Management Program

"The Public Sector Management Program is a post-graduate coursework opportunity managed and delivered by the Queensland University of Technology (QUT) on behalf of the Australian Public Service.

The program is specifically designed for management-level or management-aspiring employees to develop skills in the business of government. Successful completion results in the award of a Graduate Certificate in Business (Public Sector Management).

The program consists of four core units delivered part-time over 15 months in multiple locations across Australia. Each unit includes a 3–4 day intensive workshop and provides a strong balance of academic theory and hands-on practical skills to ensure learning can be applied directly in the workplace."

– *APS Academy Website: https://www.apsacademy.gov.au/aps-craft/leadership-management/public-sector-management-program*

## 2.3 ENHANCE UNIVERSITY-DEFENCE-INDUSTRY RESEARCH COLLABORATION OPPORTUNITIES

This section outlines some ideas for ways that university partnerships could be utilised to better meet Defence's research needs and the country's national priorities. They are again provided as discussion starters for further consideration.

### 2.3.1 STREAMLINE AND OPTIMISE THE DEFENCE-UNIVERSITY RESEARCH RELATIONSHIP

Although Australia's universities already work closely with the DSTG, as well as with Defence and defence industry more broadly, the following are opportunities for these collaborations to be enhanced and expanded.

- A key example would be in the pathway to Initial Operational Capability (IOC). Using university input in the early capability and IOC phases of planning could be highly beneficial, but this is currently a resource that Defence underutilises.

- The requirement for universities to work with Defence and industry in classified or more sensitive environments could be better coordinated. Currently, the Defence Industry Security

Program (DISP) requires all universities to implement their own secure facilities. If Defence took the lead in creating the secure infrastructure that would allow truly collaborative work between Defence, universities and industry, research work could be approached more rapidly and thoroughly.

- It's worth noting that people who work on Defence projects in universities, despite undergoing the rigorous process of gaining security clearance, often do not maintain their ties with Defence once their specific project ends. Defence could consider developing a database of these researchers that they could keep in touch with over time.

- Universities often face challenges in working with industry for technical reasons. Currently there are limited pathways for research collaboration because of incompatible or inappropriate IT systems. Again, this is an area where Defence may wish to take more of a lead role.

- Increasing transparency in Defence research funding is also key. Australia needs a transparent, coherent, and well-funded research and innovation model that leads to the development and acquisition of sovereign capabilities. The existing model still has gaps, noting the various funding sources between defence industry support, DSTG direct funding, funding from the Centre for Advanced Defence Research and Enterprise (CADRE), the Next Generation Technologies Fund, and Defence Procurement funding. Having multiple programs without an overriding strategic approach to funding risks duplication of effort, a lack of transparency, and can also make it difficult for academics to successfully navigate different programs.

- Australian academics regularly publish on issues related to the development and implementation of Defence strategy in the Australian Journal of Defence and Strategic Studies. These analyses could be better utilised by senior Defence leaders. Research is not only about creating tangible outcomes, but also about producing thought leadership, and this is a resource that Defence could choose to exploit more thoroughly.

**Case study: Defence Trailblazer for Concept to Sovereign Capability**

The recently announced "Defence Trailblazer for Concept to Sovereign Capability" program, funded by the Department of Education, and involving UNSW, the University of Adelaide, and 52 defence industry partners, is an exemplar of the type of transformation required in the Defence-university sector relationship. With a $50 million cash grant from the Department of Education, $50 million each in cash and in-kind funding from the two universities, and $143 million committed in cash and in-kind funding from industry, the involved stakeholders are co-designing two major streams of activity over the next four years, with intent to generate enduring positive change. The first stream consists of a series of nine programs aimed at driving greater integration between academia and defence industry, including university culture transformation through incentivising promotion pathways via defence research. The second stream features academic co-leads from each university, alongside industry partners, and supported by senior defence scientists in the DST Group, co-designing and executing major research programs in those disruptive technology areas identified by Defence as strategic priorities: quantum materials, technologies & computing; defensive hypersonics & countermeasures; information warfare & advanced cyber technologies; robotics, autonomous systems & AI; and defence space technologies.

### 2.3.2 MAXIMISE THE ROLE OF REGIONAL UNIVERSITIES

Regional universities could play a particularly vital role in meeting Defence needs.

a) They are more likely to be based in or close to locations where there are regional Defence bases. This offers opportunities for training and upskilling of Defence personnel in spaces that have 'veteran friendly policies'.
b) Campuses in these locations are often well-prepared to provide recognition of prior learning for skills and qualifications earned in Defence.
c) They are also more likely to have the campus space to house the kinds of large facilities required for some Defence research projects.

### Case study: The many facets of Defence-regional university relationships

Many regional universities currently work with Defence on a range of important collaborations. The following examples were provided by Charles Sturt University:

- An emergency management partnership, in which CSU helps train ADF personnel to provide support during national emergencies.
- A long-standing partnership with Defence through the Australian Graduate School of Policing and Security.
- Researchers have undertaken several projects for, or provided reports to, the ADF on critical issues like suicide and self-harm, sexual harassment, and links to organised crime.

These are just three facets amongst many.

Many of Australia's regional universities would welcome the opportunity to work more closely with Defence, to support a range of Defence's work in education, research and manufacturing.

### Case study: Regional universities' response to the foot-and-mouth outbreak in Indonesia

As is well-documented, regional communities have been hit hard by the COVID-19 pandemic, the subsequent economic downturn and, in many areas, natural disasters such as flooding and bushfires.

Throughout all of this, regional universities have played a particularly important role in supporting their local communities. For example, when foot-and mouth-disease (FMD) broke out in Indonesia earlier in 2022, Australia's regional universities were some of the first to produce solutions.

Central Queensland University developed a sensor system that detects the early signs of diseases in livestock. James Cook University is working with natural gas companies and livestock producers in southern and central Queensland to build stronger biosecurity defences against FMD. Charles Sturt University has established a new Biosecurity Training Centre with funding from the Department of Agriculture, Fisheries and Forestry, which will boost the biosecurity knowledge and capabilities of frontline staff using residential and short-course components that could be adapted for use by other Australian Government agencies.

For more examples of how universities are playing leading roles in responding to Indonesia's FMD outbreak – delivering support to our neighbours and helping stop the spread – see the Universities Australia website: https://www.universitiesaustralia.edu.au/our-universities/fmd-outbreak/.

# SUMMARY OF PART 3: WHAT DEFENCE COULD DO TO HELP UNIVERSITIES HELP DEFENCE

- Universities work in the national interest, and therefore are positioned to help Defence more effectively increase capability with highly skilled, highly educated staff. However, there are a range of ways that Defence could better signal to universities exactly *what* they need, in order to optimise how universities can assist, and how policy settings can be adapted.

- UA recommends two core strategies for making Defence's needs clearer to universities.

  – Coordinate capability needs across the entire Defence ecosystem.

    » Establish the need for and viability of a coordinating body.

    » If agreed that such a body is necessary and viable, the body should meet regularly to discuss the needs of Defence and the support that universities are able to offer.

    » Other arms of Government and other key stakeholders should be included in the establishment of any such body to ensure that a big picture, strategic approach is taken, and adequate funding and resourcing is provided.

  – Undertake a broad and inclusive workforce analysis.

    » Defence (I.e. ADF, APS and defence industry) could elevate the analysis of present and future workforce demand to an order of priority – a workforce pillar – in the development of any new Defence capability and sustainment proposals.

    » Better linkages could be established between what Defence needs and what higher education providers can provide, by including universities and TAFE in the process of analysis at an early stage of the process.

    » These workforce planning principles should be extended to those areas of the Defence complex that are not program-related - i.e. beyond STEM and into the humanities, arts and social sciences, and could even extend to the creation of a new form of knowledge worker reserve force.

    » The "whole of Defence complex" picture of workforce demand should be redeveloped and updated annually, to send the clearest signal of current and projected workforce requirements to providers of education – universities and TAFE.

- Government should acknowledge Defence's role as a national driver of a skilled workforce and acknowledge universities and TAFE as the national suppliers of a skilled workforce.

# PART 3: WHAT DEFENCE COULD DO TO HELP UNIVERSITIES HELP DEFENCE

## 3.1 COORDINATE CAPABILITY NEEDS ACROSS THE ENTIRE DEFENCE ECOSYSTEM

### 3.1.1 WHAT'S THE PROBLEM?

At its broadest level, the problem of coordination in Defence was laid out in the 2014 First Principles Review, which advocated for 'One Defence' with a strategic centre and joint capability and workforce planning. Universities Australia is supportive of this approach, as we know that universities have a limited understanding and visibility of the capability needs of Defence across its entire ecosystem. While there is much work done on the training of graduates through ADFA and partner universities, there is a less coordinated effort in the communication of Defence's broader strategy and outcomes.

Clearly, there is a role for universities to play in working with Defence, not only through the training of personnel, but through the work undertaken by university researchers in the development of technology, strategy and almost every other element of a modern Defence force.

### 3.1.2 WHAT CAN BE DONE?

As identified in Part B, there is currently a gap in the coordination efforts of Defence's strategic needs and the university sector, and the establishment or expansion of a coordinating body or taskforce that would bring together senior members of Defence and the university sector may assist with this.

This body could be tasked with providing regular updates on the workforce and strategic needs of Defence that can be addressed by the Australian university sector. As outlined above, much of this work is already underway. The purpose of this body would be to streamline and formalise communication channels between Defence and Australian universities to ensure that the most effective support can be provided.

### 3.1.3 FOUR RECOMMENDATIONS FOR ESTABLISHING A COORDINATING BODY

**Firstly,** to establish the need for and viability of a coordinating body.

**Secondly,** if agreed that such a body is necessary and viable, that terms of reference should be agreed upon and the body established.

**Thirdly,** that the body should meet regularly to discuss the needs of Defence and the support that universities are able to offer.

**Finally,** that other arms of Government should be included in the establishment of any such body to ensure that adequate funding and resourcing is provided.

## 3.2 UNDERTAKE A BROAD AND INCLUSIVE WORKFORCE ANALYSIS

Once capability needs have been established, a workforce analysis should become more viable as a next step.

### 3.2.1 WHAT IS THE PROBLEM?

Few outside the Department of Defence and partner agencies such as the departments of Finance and Prime Minister and Cabinet have a grasp of the intensive analysis required to understand Australia's future Defence workforce needs. The difficulties and complexities associated with this task do not often survive the journey of simplification as it moves into the public sphere.

Any serious workforce analysis must not only comprehend the needs of the Australian Defence Force itself, but also the Australian Public Service and the complex of defence industry, large and small.

And that is just for the process of acquisition and sustainment – those discrete, numbered projects to which these planning processes can be easily attached.

Predicting the broader human requirements for national security is even more complicated. Best efforts can only be made with assumptions of present and future workforce. Revisions must be conducted on a regular basis. To paraphrase a truism, "we will keep predicting until we get it right".

Yet these exercises of complex workforce planning must be conducted, and as a nation we must become better at it. The first step in improvement is to understand workforce supply and demand. The second step is to understand the interdependencies of workforce demand not only within Defence, but across the broader Australian economy and, in some cases, international factors.

The workforce available to Defence is dependent upon many factors outside its control, including competition from other sectors and the capacity of the higher education system to produce the skilled workers that it needs.[14]

Australia's higher education system serves the nation by conducting research, and by teaching. Part of this involves teaching the research and technical workforce.

The available workforce at any point in time is also susceptible to the impact of future Government decisions, such as new multi-billion dollar projects that increase demand for an already small talent pool. This is to say nothing of external factors such as a new mining boom, a surge in infrastructure investment or international demands.

For example, decisions in 2016 to take on four new shipbuilding programs simultaneously highlghted the limits of Australia's shipbuilding workforce, as primes competed for critical skills. This intra-project competition for the workforce had the cumulative effect of forcing up project costs.

There is also the risk of a deleterious effect on supply chains as larger companies with deeper pockets hollow out smaller ones unable to match the higher wages on offer.

### 3.2.2 WHAT CAN BE DONE?

Defence cannot do this workforce planning alone.

[14] Note our previous recommendation (at 2.1.2) to open up protected internships and roles so that the 100,000+ international students from allied countries currently studying in Australia could help meet workforce needs.

This is a national challenge. The Government's initiatives to focus more heavily on these issues, such as through the establishment of Jobs and Skills Australia, are a welcome, economy-wide development, and this needs to be treated as an economy-wide issue.

Australia needs more trained and trainable people to support our nation's defence. The Australian teaching system needs to teach enough people to provide breadth and depth across many areas of Defence need.

Anecdotally, too many critical areas are at or near "one deep", and workforce demographics are not favourable.

Australia needs to teach enough people in anticipation of them moving *within* the Defence sector – ADF, APS and defence industry. Australia must also teach enough people in anticipation of them moving *in and out of* the Defence sector to other sectors demanding high-level engineering, science, technological, program management and logistics skills.

**Australia needs more trained and trainable people to support our nation's defence. The Australian education system needs to teach enough people to provide breadth and depth across many areas of Defence need.**

There may also be opportunities for Defence to partner with specific universities to create an additional tier of knowledge worker reserve forces, built around skills shortages in areas like STEM, cultural and strategic studies, languages, health disciplines and policy, to name a few.

In exchange for their program of study being paid for by Defence, graduates of those programs would be required to undertake a period of service as a form of standby reservist

Graduates of this program could be called upon by Defence in the same manner that standby reservists are currently activated. Where Defence has a particular skills shortage and there is a critical need for a role to be urgently filled, Defence could call upon graduates with those skills for an agreed period of service.

This would allow Defence to have a reserve force with the necessary skills, ready to be deployed rapidly if geopolitical conditions change, or in response to a specific crisis. By identifying core knowledge and high-level skills used in both Defence and non-Defence contexts and investing in programs that would allow and encourage individuals to attain those skills, an expansion to the reserve workforce could be created that is able to deploy civilians into the Defence workforce if or as needed.

### 3.2.3 FIVE RECOMMENDATIONS TO IMPROVE AUSTRALIA'S DEFENCE WORKFORCE AVAILABILITY

**Firstly**, Defence (I.e. ADF, APS and defence industry) could elevate the analysis of present and future workforce demand to an order of priority – ***a workforce pillar*** – in the development of any new Defence capability and sustainment proposals.

**Secondly**, developing this workforce pillar would allow ***better linkages*** to be established between what Defence needs and what the suppliers of teaching can provide, by including universities and TAFE in the process of analysis at an early stage of the process.

**Thirdly**, extending these workforce planning principles to those areas of the Defence complex that are not directly related to specific programs of work could extend skills demand to areas beyond STEM and into the humanities, arts and social sciences. The importance of these disciplines, which include languages, law, ethics and psychology, to our national security has been downplayed in recent times. They are critical. Defence could consider creating a new kind of standby reserve force

of knowledge workers with capability across these disciplines, as well as in STEM, that could be activated in times of national need.

The **fourth recommendation** is that a "whole of Defence complex" picture of workforce demand be redeveloped and updated annually. This renewed ***Defence Strategic Workforce Plan*** would be developed to send the clearest signal of current and projected workforce requirements to providers of teaching – universities and TAFE. The new annual Defence Strategic Workforce Plan would be a foundational piece in driving the allocation of resources to teaching.

And **finally**, that the Australian Government acknowledge that a person trained by universities or TAFE for Defence – whether it be ADF, APS or defence industry – remains a national asset, even if they move out of Defence into another sector.

In short, it is critical that Government acknowledge Defence's role as a national driver of a skilled workforce and recognise universities and TAFE as the national suppliers of a skilled workforce.

# APPENDIX A: A BRIEF EXPLAINER ON HOW AUSTRALIAN UNIVERSITIES WORK

## TEACHING, RESEARCH AND COMMUNITY ENGAGEMENT: THE THREE CORE PURPOSES OF UNIVERSITIES

Universities serve a range of purposes in Australian society. For one, they teach students in a range of professional and generalist disciplines and equip them with both specialised and generic skills that are useful in the labour market and contribute to society more broadly.

For another, they undertake research including fundamental basic research and a range of applied research, including in partnership with industry and other stakeholders.

Thirdly, universities serve the community across a range of areas. They provide expert advice to governments and commentary in the media to the general public, they incubate start-ups and scale-ups in the national interest, they often make research findings and innovations open access, so that they can be built upon by others, and they work with their own local communities during times of crisis or national disaster. Many of these activities are carried out at no cost to the taxpayer, and for no financial benefit to the university.

Universities are large, complex, autonomous organisations, and each one pursues its own institutional mission and operates on a slightly different business model. In this appendix, we will provide an overview of some basic principles upon which a range of university operations are based.

## HOW DOES RESOURCING WORK AT UNIVERSITIES?

In line with two of their three core purposes outlined above, universities primarily attract revenue in two core areas: teaching-related revenue and research-related revenue. However, the money received in each of these areas comes from a range of different sources.

### TEACHING-RELATED REVENUE

Domestic undergraduate student revenue at universities comes from two sources: the Commonwealth Grant Scheme (CGS) and student contributions. For every Commonwealth-supported place (CSP), a university receives a 'Commonwealth contribution' through the CGS, plus a student contribution. The bulk of students (around 90 per cent) defer payment of their student contribution through the Higher Education Loan Program (HELP). In this case, the Commonwealth advances the amount of the student contribution to the university and the student incurs a HELP loan debt which is paid back through the tax system once the student's income reaches the repayment threshold ($47,014 in the 2021-22 financial year).

Commonwealth contributions differ by field of education. Rates are set out in the *Higher Education Support Act 2003* (HESA) and are indexed annually. There are four different 'funding clusters'. Similarly, HESA sets out maximum student contribution amounts for different fields of education. There are four different 'bands'. In all, there are eight different combinations. These are shown in Table 1 below.

**Table 1. Commonwealth and student contribution rates, 2022**

| Funding Cluster | Part of Funding Cluster | Maximum Student Contribution Amounts | Commonwealth Contribution Amounts |
|---|---|---|---|
| Funding Cluster 1 | Law, Accounting, Administration, Economics, Commerce, Communications, Society and Culture | $14,630 | $1,109 |
| Funding Cluster 2 | Education, Clinical Psychology, English, Mathematics, Statistics | $3,985 | $13,369 |
| | Allied Health, Other Health, Built Environment, Computing, Visual and Performing Arts, Professional Pathway Psychology, Professional Pathway Social Work | $8,021 | |
| Funding cluster 3 | Nursing, Indigenous and Foreign Languages | $3,985 | $16,396 |
| | Engineering, Surveying, Environmental Studies, Science | $8,021 | |
| Funding cluster 4 | Agriculture | $3,985 | $27,243 |
| | Pathology | $8,021 | |
| | Medicine, Dentistry, Veterinary Science | $11,401 | |

Table 1: Distribution of funding for Commonwealth Supported Places across the 4 discipline clusters. Source: Department of Education, Skills and Employment (2022), Allocation of units of study to funding clusters and student contribution bands according to field of education codes 2022, accessed 02/09/2022.

Universities can offer postgraduate coursework places as CSPs or as 'domestic fee paying' places. It is illegal for public universities ('Table A universities' in HESA) to offer undergraduate places to domestic students on full fee-paying basis.

For domestic postgraduate coursework students in CSPs, funding and loan arrangements are identical to those for domestic undergraduate students described above. For full fee-paying domestic students, there is no Commonwealth contribution and no cap on the fees that universities

can charge. However, these students have access to the HELP loan system to defer payment of their fees.

Following major changes to university funding enacted in 2020 and taking effect from 2021, Government allocates to public universities a 'maximum basic grant amount' (MBGA) each year. For a transition period ending on 31 December 2023, MBGAs are guaranteed – that is, universities receive the MBGAs set out in their funding agreements with the Commonwealth. From 2024, the MBGA will be (as the name suggests) a maximum. If a university enrols students to a lesser value (calculated from Table 1 above) than the MBGA, it will be funded for the students it actually enrols.

Within the MBGA, a university has flexibility to spend CGS funding on student places at postgraduate coursework, Bachelor or sub-Bachelor (Advanced Diploma or Diploma) levels. Previously, Government allocated specific numbers of CSPs at postgraduate coursework and sub-Bachelor levels to each university.

MBGAs are indexed each year in line with the Consumer Price Index (CPI). Further, MBGAs increase to allow growth in commencing student numbers according to a formula based on the region of origin of a university's students. The growth factor is a pro rata calculation based on the share of students from regional, 'high growth metropolitan' and 'low growth metropolitan' areas.

International students,[15] on the other hand, are typically full-fee paying students – that is, they are not eligible for a CSP, and they are also not eligible for a HELP loan.[16] Study Australia, the official federal government site for international students, gives the typical annual tuition fees for international students as:

- 3-4 year undergraduate/bachelor level degree – AU$20,000 to $45,000 per year
- 1-2 year postgraduate/masters level degree – AU$22,000 to $50,000 per year
- 3-4 year doctoral degree – AU$18,000 to $42,000 per year[17]

These fees have become a key source of revenue for many universities, allowing them to fund the costs of research activities which are not covered by Government research funding (see below). In 2019, international student fees contributed just under $10 billion to university operating revenue or 27.1 per cent of total revenue. In 2020, over 50 per cent of Higher Education Research and Development (HERD) expenditure was self-funded.

Universities also receive additional funding from governments to support the participation and success of students from disadvantaged backgrounds and to promote equity in the provision of higher education through the Higher Education Participation and Partnerships Program (HEPPP). There are also loadings on the CGS to support regional provision (the Regional Loading) and students in Enabling programs. There is also a loading on CGS to support places in Medicine.

## RESEARCH-RELATED REVENUE

Universities receive funding from a variety of sources in order to undertake the research component of their core mission. The funding from most of these sources is competitive – that is, Australia's 39 universities must compete with each other for a share of the funding from across the following sources:

- Commonwealth Government funding, including:

[15] An international student is defined in Australia as a student who is not an Australian citizen, an Australian Permanent Resident or a New Zealand citizen.

[16] With the exception of New Zealand citizens, who are eligible to access a Commonwealth Supported Place but are not eligible for a HECS or HELP loan unless they meet the requirements of long-term residency. More information about this can be found here: https://www.studyassist.gov.au/help-loans/non-australian-citizens.

[17] See https://www.studyaustralia.gov.au/english/live/living-costs - note, this does not include high cost of delivery courses such as veterinary and medical. Please visit institution websites directly to see costs for these courses.

  - National competitive grants, largely through the Australian Research Council and the National Health and Medical Research Council
  - Research block grant funding for research training (i.e. Masters by Research and PhD students, called the Research Training Program) and to support the indirect costs of research (the Research Support Program) administered through the Department of Education
  - The Medical Research Future Fund
  - Other grant programs, such as:
    - the National Collaborative Research Infrastructure program
    - the Cooperative Research Centres program
    - the Rural Research and Development Corporations; and
    - other agency-specific grant programs, such the Australian Renewable Energy Agency and the National Environmental Science Program.
- State and Territory Government grant programs and partnerships
- Industry and NGO partnerships
- University own-source revenue
- Philanthropic funding

Table 2 outlines the breakdown of sources of research funding across the university sector in 2020 (noting again that this is shared among 39 different organisations).

| How research is funded in universities | Amount in dollars | Percentage of total research-related revenue |
|---|---|---|
| Competitive grants (including block grants for research training, grants through the ARC and NHMRC, and funding from other Commonwealth and non-Commonwealth grants programs) | $3.98 billion | 31.4% |
| General university funds (i.e., universities reinvest their own revenue derived from other areas into research-related activities) | $6.73 billion | 53.2% |
| State and local government grants | $0.45 billion | 3.8% |
| Revenue from business (i.e., industry and NGO partnerships, venture capital investments, Initial Public Offerings, other forms of commercialisation of university research, and payments for R&D projects funded by or carried out on behalf of businesses, irrespective of whether private or government owned) | $0.60 billion | 4.8% |
| Donations, bequests and foundations (including research specific donations and bequests from non-profit organisations and Australian individuals) | $0.41 | 3.3% |
| Overseas funds (including R&D grants and payments for R&D projects funded by or carried out on behalf of non-Australian or overseas entities) | $0.44 | 3.5% |
| **Total university research funding in Australia in 2020** | **$12.66 billion** | **100%** |

Table 2: Distribution of research funding in universities in 2020, the most recent data available. Source: ABS, 2020, Research and Experimental Development, Higher Education Organisations, Australia methodology. https://www.abs.gov.au/statistics/industry/technology-and-innovation/research-and-experimental-development-higher-education-organisations-australia/latest-release

## HOW DO UNIS WORK OUT WHAT PROGRAMS TO OFFER, AND HOW MANY PLACES TO OFFER IN THOSE PROGRAMS?

In short, universities respond to demand – from both students and employers.

> *The Government does not precisely determine how many CSPs are funded each year. Each Table A provider (i.e. each university) determines the mix of courses offered up to the Maximum Basic Grant Amount (MBGA), and the number of students funded within a given MBGA can vary considerably. For example, the 2021 Commonwealth contribution amount of $27,000 for one commencing full-time Agriculture student could fund approximately 25 full-time commencing Law students, which attract a Commonwealth contribution of $1,100.*[18]

Of course, the Commonwealth contribution is only one part of the resourcing allocation for university places: student contributions also factor in universities' financial calculations. Unlike the CGS, there is no limit on the aggregate value of student contributions that a university can receive in a given year, nor on the number of students who can be charged student contributions.

Universities' decisions about whether to offer a program, and if so, how many places to offer in that program, are influenced by a range of practical considerations, such as:

- What is our physical enrolment capacity (that is, how many students can we fit in classrooms, lecture halls, specialist studios or labs in a day if necessary)?
- How many teachers do we have with this discipline expertise, and what's their FTE capacity for preparation, teaching and marking per student?
- What was demand for this program like in the previous period?
- What do indications of demand in the immediate future look like?
- What factors are likely to affect whether demand goes up or down for this program in the upcoming period?
- What are current and future labour market demands in different industries and occupations in the university's area of operations?
- How many placements are available in those professional disciplines where professional experience is a mandatory component of degree studies (e.g. Health disciplines, Education, Engineering)?
- What are the other costs per student required to offer this course, such as the costs of consumables, new equipment or facilities?

… and so on.

**For further information about how universities operate, or any other considerations raised in this submission, please contact Peter Chesworth, Deputy CEO of Universities Australia, on p.chesworth@universitiesaustralia.edu.au.**

[18] Ferguson, 2021. "A Guide to Australian Government Funding for Higher Education Learning and Teaching." https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/rp/rp2021/GovernmentFundingHigherEducation.