

ADBED

Australian Deans of Built Environment and Design

Submission to the Enquiry into Research Training in Australia House of Representatives Industry, Science and Innovation Committee

Introduction

The Australian Deans of Built Environment and Design is an unincorporated association of leaders and is the peak representative body for the Deans of seventeen schools and faculties in Architecture, Urban and Regional Planning, Building and Design.

Built Environment and Design expertise is vital to the future necessities of Australia's environmental, economic and sustainability outcomes, and crucially underpins the nation's innovation capacity.

The Built Environment and Design disciplines focus on high quality curiosity-driven basic research, as well as high quality use-driven applied research, use-inspired scientific research and practice-based research all of which address the multiple needs of the building industry, government planning agencies, innovative design solutions and the broader social and cultural domains of community. Engagement with industry stakeholders and the broader community is an underpinning principle of the Built Environment and Design disciplines. It is as a fundamental part of this that research training in the Built Environment and Design disciplines comprise an essential component of providing the future research leaders to resolve the challenges of Australia's future via the application of innovative research models that serve the various needs of both industry and community.

However, whilst Australia grows in terms of population, economy and industrial productivity there is an increasing demand for research graduates in the fields of Architecture, Urban and Regional Planning, Building and Design. The critical issue for the Built Environment and Design disciplines has thus become one of struggling with the demands to produce graduates, whilst in competition with industry for research students and research staff.

The ability to attract and retain higher degree by research students in the areas of Architecture, Urban and Regional Planning, Building and Design has thus become dependent more than ever upon the quality of research training available, the perception of clear career pathways post-graduation, funding associated with the provision of research training, the quality and profile of research staff, the availability and quality of research infrastructure, and the ability to compete nationally and internationally with industry and overseas research institutions.

The contribution of Research Training Programs to Australia's Competitiveness in the Areas of Science, Research and Innovation.

Research Training is critical to the social and economic development of any country. Given the breadth of the Built Environment and Design disciplines, as well as the multiplicity of the problems that affect the physical construction of the contemporary world, the ability to expand research, innovation and industrial capacity in the area of built and designed environments is paramount to the timely formulation of appropriate responses.

The importance placed on research training in Built Environment and Design is almost a trademark of advanced economies. In the United States, Japan, Korea, Finland and France, for instance, academia contributes strongly to the definition as well as to the testing of industry and government policy.

Research training programs also provide the grounding and development opportunities for future research and innovation leaders. Many overseas institutions with a focus on the built environment (such as Imperial College, the University of Salford, or the University of Reading in the UK, the University of Paris Belleville in France, Harvard University and MIT in the US, or the National University of Singapore) fulfil this function, not only in relation to the needs of their own country but also internationally.

In Australia, research-training programs are equally essential to sustain the nation's development and innovation potential. Given the country's regional position, they are also critical to ensure opportunities and competitiveness in the larger arena. Through proper research training, Australia can perform a leading role within its global region.

RECOMMENDATION: ADBED would urge the Commonwealth to recognize the potential dangers confronting higher degree research training schemes in Australia and potential loss of future research and innovation capacity by failing to adequately support the broad needs of research training in Australia.

The Effectiveness of Current Commonwealth Research Training Schemes.

The current RTS and APA/APAI structures provide the primary sources of tuition funding and stipend living allowances for all Higher Degree by Research domestic students in Australia. The levels of the RTS and APA funding are however lagging behind the real costs of living, university costs and competition by industry and overseas institutions. The following, therefore, needs to be taken into account.

Whilst ADBED welcomes the increase in the number of Australian Postgraduate Awards (APAs) announced by the government in the 2008/09 Budget (increase from 4,800 to 10,000 by 2012), the level of APA funding is of crucial and growing concern.

Current (2008) APA funding of HDR students (full-time) is \$20,007. In contrast, students under the Australian Postgraduate Awards Industry (APAI) receive a stipend of \$26,140. Next to this, the 'poverty line' as determined in December 2007 was \$19,454¹. This places enormous pressure

¹ <http://www.melbourneinstitute.com/labour/inequality/poverty/Poverty%20lines%20Australia%20Dec%202007.pdf> accessed May 2008

on students merely to survive in the community. Some universities, though not all, are providing 'top-up' scholarships to APA students, often to the level of an APAI, to ensure students receive a liveable wage, without having to undertake excessive part-time work at subsequent disadvantage to their studies. The desire to provide APA top-ups is not sustainable in the long term given the precarious nature of university funding. At the same time, the size and duration of the student stipends is a critical factor in attracting and retaining postgraduate research students, and in Australia's international reputation as a quality education provider.

Given high employment rates and a booming economy, any increase in the APA numbers without increasing the pool of quality candidates, will only exacerbate student shortages and leave many scholarships unfilled. ADBED notes that the favourable economic conditions enjoyed by the Australian construction industry over the last 10-15 years explains the limited pool of Australian research trainees in Architecture, Urban and Regional Planning and Building: within a buoyant industry, research occupations have not been competitive in terms of salaries, even for those who join the industry as fresh graduates. The level of post-graduate funding is insufficient to attract, support and retain good minds against competition from industry. As such there is a real and urgent problem in attracting high quality PhD students in the face of competition from employment in the academic disciplines of Architecture, Urban & Regional Planning, Building and Design when graduates are offered salaries that are more than twice the \$20,007 APA scholarship and almost all graduates, and certainly all of those with the calibre to undertake PhD, are successful in gaining employment. The scheme needs to be made more attractive in order to attract high performing Australian PhD students. Within the Built Environment and Design disciplines, this becomes painfully evident any time research-funded scholarships are available: it is difficult to convince industry to collaborate, or commit their cadres, and it is even more difficult to procure suitable PhD candidates. As a result ADBED believes that in order to address this situation, the base level of APA funding should be increased to at least that of the APAI (\$26,140) to better reflect the living needs of HDR students and industry competition.

The maximum tenure of the APA is 2 years for a Masters and 3 years for a PhD with the possibility of a six month extension. The national average time for completion of a Masters is 3.5 years, while the average is 5.4 years for a PhD². This relatively high average completion time is occurring despite significant effort within Built Environment and Design schools/faculties being expended to facilitate timely completions. Tenure of an APA for a PhD should be increased to at least 3.5 years with the possibility of 6 month extension in line with the notion of a 'timely completion', that is within the four years of RTS funding (although it should be recognized that PhD's were funded prior to the advent of the RTS system for a period of 5 years).

Additionally, ADBED is concerned with the current disciplinary differential between 'low cost' and 'high cost' RTS places. This should be closely examined because for Built Environment and Design disciplines classed as 'low cost' RTS disciplines, this fails to take into account infrastructure requirements such as laboratories, experimentation, computing, studio space or the substantial demands in cost and support required in terms of travel and fieldwork which comprise essential components of Built Environment and Design HDR research. Built Environment and Design RTS tuitions fees should be set at the higher cost level (\$25,000) to more adequately cover the necessary infrastructure, tuition, travel and fieldwork costs.

Major Commonwealth research scholarship schemes are focussed on students following a traditional pathway (following completion of honours) to a higher degree. Flexibility to support a return to higher education, either on a full-time or a part-time basis, by students currently within

² Graduate Careers Australia, *Postgraduate Destinations 2006 – The Report of the Graduate Destinations Survey*.

the workforce, is essential. In addition to supporting the student, consideration should also be given to supporting industry to up-skill workers – which would help meet Australia’s future requirements for professionals with tertiary qualifications. There are several models within industry that could be drawn upon – including Defence Science and Technology Organisation (DSTO) and Google.

RECOMMENDATION: ADBED would urge the Commonwealth to increase funding levels of APA scholarships to at least the current 2008 level of APAI Scholarships; to expand the APA funding period to a minimum of 3.5 years with the possibility of a further six months; to increase RTS tuition fees; to raise all Built Environment and Design RTS tuition fees to the higher banding level; to develop university and industry/practice related HDR collaborative incentives.

The Adequacy of Current Research Training Schemes to Support Australia’s Anticipated Future Requirements for Tertiary-Qualified Professionals in a Wide Range of Disciplines.

As outlined in the previous section, ADBED believes that the effectiveness of current Commonwealth research training schemes are in need of urgent attention, and whose accumulative effects of lower enrolments in PhD’s due to inadequate financial tuition and stipend support and industry competition, is seriously eroding the future requirements of tertiary-qualified professionals nationally and in particular within the disciplines of Built Environment and Design.

With an ageing staff profile in Architecture, Urban and Regional Planning, Building and Design in many universities, succession planning is a key issue. There is a definitive need to increase the number of PhD studentships in these fields. It is also noteworthy that an increasing number of enrolling PhD students are not new graduates but individuals who have taken early retirement from the workforce. Whilst they often produce high quality research they do not represent the next generation of cutting-edge career-focused Built Environment and Design researchers and educators. What results from this is an increasingly acute shortage of suitably qualified supervisors further exacerbating the problems of recruitment or expansion of current numbers of HDR Masters and PhD students.

Often when we seek to appoint staff we are faced with the problem of strong applicants with good practical experience and skills but no PhD. The University policies on recruitment are increasingly targeted at PhD qualified staff. Some mechanism to facilitate practitioners to acquire doctoral qualifications is needed to bridge the growing divide between educators and practitioners.

Australia appears to be lagging behind its economic peers in terms of research training opportunities and research output, particularly in relation to its domestic cohort. Although the production of international scientific publications in the built environment has long been on a par with that of other OECD countries in most disciplines, research activity in the built environment has a relatively minor weight when it comes to the official allocation of government funding. The number of grants assigned in the area is limited, and a large proportion of HDR students come from outside Australia. Australia is currently contributing more to the training of foreign students than domestic ones. This represents a worrying trend for the future that needs to be reversed in

terms of increasing incentives for new domestic HDR students that can provide a realistic stipend for living expenses and competition with industry.

ADBED perceive that there is a need to develop a range of industry-specific PhDs and Masters by Research to serve Built Environment and Design disciplines. However, better awareness within the professional community is also needed. The nexus between academia and practice needs to be better developed. Practice needs to see the benefits of research, applied research in particular. Therefore, different incentive schemes should be put in place to encourage this kind of collaboration.

RECOMMENDATION: ADBED would urge the Commonwealth to increase the number and value of stipend and tuition scholarships whilst further expanding on industry/practice related HDR incentives and partnerships.

Adequacy of Training and Support Available to Research Graduate Students in Australia

As noted in earlier sections, current levels of training and support for HDR students are coming under severe pressure from several sources. As a result, the availability and quality of research infrastructure that supports research training has been of increasing concern to the sector in general and ADBED in particular. In the report from the Productivity Commission, the level of deferred maintenance on capital assets in universities was estimated at \$1.5 billion in 2005³. Even allowing for measurement issues it is clear that infrastructure in Australian universities is of concern. ADBED welcomes the announcement of the Education Investment Fund and the one-off payments for university infrastructure in the recent Budget. Of equal importance is the continuation of the National Collaborative Research Infrastructure Strategy (NCRIS), which ensures that Australia has cutting edge infrastructure in areas of strategic national importance.

However, whilst infrastructure funds have increased, at least for 2008, more directed infrastructure funds should be targeted at HDR requirements if Australia is to achieve a quality-driven increase in current numbers of students undertaking Masters and PhDs and adequately providing for their needs. At the moment, Built Environment and Design PhD students are generally provided with good levels of support in terms of office space, computers etc. However, accommodation shortages are beginning to present issues. As numbers increase, there will be distinct problems in accommodating research students effectively into the future. Funds are also made available to support travel to national and international conferences, although there is no national standard on minimum support levels of such activity and the amount provided varies from institution to institution.

There is generally an urgent need to increase the number of staff in Built Environment and Design disciplines with PhD qualifications and with significant research track records. It is from this cohort that HDR supervisors primarily derive. At the same time, project-based research theses are also becoming very common and crucial for Built Environment and Design schools/faculties as they bridge the divide between academic research and design/architectural practice. These are often very expensive and require a great deal of prototyping and support. They

³ Australian Government Productivity Commission (2007) *Public Support for Science and Innovation*, Commonwealth of Australia, p214.

should also attract the higher tuition level of RTS funding than the lower level generally awarded to humanities-type PhDs.

Australian PhD programs are currently not funded with recognition of any 'taught' components or support even though it is suggested that RTS programs can include taught subjects. With growing numbers of students entering PhD and Masters research programs from very different primary degree backgrounds, there should be a requirement for a taught component built within all research degrees and that government funding should support this. The type of subject could be left to institutions but research methods, core discipline context and scholarship should be covered in order to improve the quality and completion rates of HDR degrees.

RECOMMENDATION: ADBED would urge the Commonwealth to extend funding under the RTS to allow for taught coursework components of HDR Masters and PhD programs and to identify the Built Environment and Design disciplines as a special national case for targeted HDR/APA/RTS support.

Factors for Graduates that Determine Pursuit of a Career in Research

A decision to undertake a research-focused career within the Built Environment and Design disciplines is most likely to stem from a personal interest in a particular research field and subject along with a desire to enter a research-led community. For Architecture, Urban and regional Planning, Building and Design, such options can only be undertaken within the university sector.

Next to the above, an active and supportive research culture is emerging within Built Environment and Design disciplines at the faculty/school levels. This is due to the fact that the research is still in capacity building phase when compared with more mature areas such as medical research or science. However great efforts are being made to encourage and support a high quality-driven research culture through various strategies, but mainly through the attraction of HDR students who will provide an expanded cohort of research leadership in the future.

Nevertheless, at a time when growth is required from HDR numbers, a research career for a graduate, from what may be classed as primarily professional based disciplines, has to confront the realities of poor financial support and security in terms of immediate career prospects than for those who enter the Architectural, Planning, Building or Design professions. After four year undergraduate courses with Honours or three years plus a two year coursework masters in Architecture, the vast majority of graduates from the Built Environment and Design disciplines enter a professional career in industry practice, which is largely what their qualifying degrees are directed towards. And whilst research does comprise a significant element of Honours years, or coursework Masters structures, research as a career outcome is taken up by very few Australian domestic graduates. Further key support for the capacity building of HDR student cohorts within the disciplines of Built Environment and Design would therefore be desirable as a means to counter various negative perceptions of research as a career option by many of our brightest graduates.

RECOMMENDATION: ADBED would urge the Commonwealth to develop and support strategic national initiatives for the expansion and capacity building of Architectural, Urban and Regional Planning, Building and Design HDR cohorts.

Opportunities for Career Advancement for Research Graduates and Staff

ADBED notes that as financial pressures continue to increase on universities this can have no other outcome than to impact on their ability to offer job security and attractive salary packages for research leaders, or offer attractive support for the next generation of leaders. There is a widening gap between competitive government grant funding and the full cost of research, which is not bridged by University Research Block Funding. While research in universities for industry and other segments of the public sector are done on a full cost basis, the gap between the funding supplied under ARC and NHMRC programs and the real cost of undertaking this research must be met by the universities. This impacts significantly on universities undertaking curiosity-driven research, and the development of the next generation of research leaders.

Inevitably, this directly impacts on the ability of universities to attract, retain, develop career pathways or provide job security for HDR graduates within the higher education sector even though they represent the key group for securing the next generation of research academics. ADBED believes that a systematised and organised approach to supporting early-career researchers, through to mid-career and senior researchers is needed so that career pathways within the Australian higher education research sector are defined. New and existing initiatives, such as Future Fellowships and the ARC Fellowships, are to be welcomed, as they will assist in retaining and attracting mid-career and senior researchers. But new HDR graduates are unlikely to be competitive for many of the available or new funding schemes, resulting in HDR graduates leaving the sector for industry, or to pursue opportunities overseas. Consideration needs to be given for support to bridge the gap between research training and entry into the research workforce, which may, for instance, take the form of early career fellowships.

Of concern for ADBED is the need for more HDR trained staff. But this is set against a background of large student enrolments within Built Environment and Design schools/faculties, which are under pressure to maintain staffing levels in response to a shortage of academic staff and increasing teaching demands, which are undermining research activity. And yet, when the result of such demands leads to the appointment of new HDR trained staff, they are predominantly offered teaching and research positions, which can remove them from any research career pathway due to an excessive teaching and administrative load, thus limiting their access to HDR student supervision and opportunities for research funding support. In addition to this, there is a need for the Built Environment and Design disciplines to develop more research focused activities that will be able to create links between their practice, teaching and research activities.

RECOMMENDATION: ADBED would urge the Commonwealth to provide full-cost provision within all national competitive grant funding (ARC, NHMRC etc) and to consider the development and implementation of a national early career research Fellows scheme.

Factors Determining Pursuit of Research Opportunities Overseas

As noted earlier, there is a clear need to set up systemised, tiered schemes to support research-only staff from the junior to most senior levels, as well as schemes facilitating mobility within the academic sector and between the academy and industry. In order to retain Australian domestic

HDR graduates, the perception, or actuality of improved working conditions and career opportunities overseas needs to be countered by the establishment of equally high quality facilities, research funding and career prospects within Australian universities. An expanded and more competitive range of early career fellowships and post-doctoral awards may also counter the incentives of international scholarships and grants from institutions, for example, within the USA and UK.

International prominence/prestige/drawing power is not only a function of the institution but also a function of the context within which the institution exists. As far as the Built Environment and Design disciplines are concerned, Australia does not have the same density of research clusters, research culture and research recognition that exists in Europe and North America; more intense academic circles must be generated and broader networks produced. This can be achieved by specializing and by instituting active collaborations, and by using the region as a laboratory.

It should also be noted that Australia is not without its own attractions for researchers. It is recognized, for instance, that for Urban and Regional Planning, the opportunities for planning research to work closely with State governments and local authorities extend beyond the reach of many researchers in UK. Nevertheless, it will only be with sufficient support that the research outcomes from disciplines of the Built Environment and Design will be able to equal overseas competitors. However, both the Commonwealth and academic institutions will need to recognise and support the emergent and essential research domains of the Built Environment and Design disciplines in order to compete internationally.

RECOMMENDATION: ADBED would urge the Commonwealth to develop and implement a national and internationally competitive program of post-doctoral and research fellowship schemes targeted at HDR graduates and early career researchers; and develop a national scheme to directly support the expansion of Built Environment and Design research clusters within each of their institutional schools and faculties.

Australia's Ability to Compete Internationally for High Quality Researchers

ADBED recognizes that Australian universities are facing increasing competition for high quality research staff – nationally, from other research institutions and industry, and internationally in the increasingly global research arena. Attractive salaries, high quality and high profile research activities, cutting-edge research infrastructure, international linkages, clear career paths and a high quality of life are all important in retaining Australian researchers, and attracting new entrants and international players. The ability of the sector to provide ongoing appointments and additional Fellowships/scholarships is also a major factor in retaining and attracting high quality research staff and students within the Built Environment and Design disciplines.

The challenge, however, within higher education as a whole is to raise the standard across the entire sector to world-class levels, and reverse trends such as the rising student-staff ratio that erodes the research time of academics within the disciplines of Built Environment and Design. Next to this, given that there are very few HDR tuition and/or stipend scholarships available in Australia for overseas applicants, there is clearly an urgent need to substantially expand programs such as the Commonwealth Endeavour International Postgraduate Research Scholarship scheme, the Commonwealth Aus-Aid tuition and stipend awards, or even cross-allocate a number of the newly expanded APA scholarships towards overseas HDR students in order to better compete internationally and offset the disincentives of a higher Australian dollar.

Strengthening the international quality of research training in Australia should also involve making the student research work conducted within Australian universities internationally competitive. This could be achieved by ensuring that HDR candidates have international training experience, possibly through the establishment of collaborative programs with international research institutions. The advantage of such links would promote the research of Australia and denote its own high international value and assist in attracting research students from overseas. The simplest way to check the success of any such policy would be to consider the number of HDR students attracted from other university-rich countries in Europe and North America. At the moment, Australia is not a preferred destination from either continent when it comes to Built Environment and Design disciplines (the high number of overseas HDR students currently enrolled come from other destinations). As it stands, we lose more graduates and future research leaders to Europe and the USA than we gain. If attracting international researchers and trainee researchers to Australia is considered beneficial, then a competitive, supportive and well-funded HDR environment must be provided across the Australian university sector.

Incentive towards the above goals might also include for overseas researchers and HDR graduates a preferential research classification for migration purposes. Consideration might also be given to an automatic one-year visa extension for overseas graduates to encourage and facilitate them to seek employment within Australia. Not only does this have the potential to address the broader skills needs of industry and government, it also assists in overcoming issues created by the extensive lag time between application and announcement of national competitive grant outcomes. The graduate can seek work in industry or universities while awaiting a grant outcome, whilst potentially preventing the loss of talent from the higher education and broader research sector because the graduate is not compelled to return overseas.

RECOMMENDATION: ADBED would urge the Commonwealth to substantially expand the current levels of Endeavour IPRS tuition fee awards with a view to developing an additional scholarship for each successful applicant to support living expenses; to expand the number of Aus-Aid tuition and stipend awards; and to consider a new Commonwealth scheme to support international HDR collaborative programs.

Whether Australia's Academic Workforce is Ageing, and its Impact on Research Capacity

Structural reasons make research training critical at this point in time. Irrespective of the transformations in the technological/cultural framework defining Built Environment and Design disciplines, Australian universities are going through major generational changes, and with a significant proportion of academics nearing retirement, schools/faculties will have to replace this source of knowledge built incrementally through experience with strategic preparation acquired via higher research degrees and support for early and middle career researchers.

Many of the major research funding initiatives (including Cooperative Research Centres, National Collaborative Research Infrastructure Strategy, CSIRO Flagships, ARC/NHMRC grants) have significant expectations for in-kind (i.e. unfunded) support from research leaders. When coupled to broader expectations for researchers to undertake student supervision, research commercialisation and community/industry engagement, there are increasing demands on university discretionary funds. Notwithstanding the financial implications, the expectations placed on senior researchers are leading to fatigue and attrition. There is a need for major

initiatives to recognise and support the involvement of research leaders whilst also setting in place appropriate generational renewal strategies and research mentoring programs. The question of workforce aging from the perspective of senior researchers is not one of diminishing currency of research experience, expertise and knowledge, but one of succession planning and resources that allows for a timely process of training and mentoring junior researchers in preparation for more senior roles. At the core of this process are HDR programs.

RECOMMENDATION: ADBED would urge the Commonwealth to develop and implement key succession planning schemes to support the training and mentoring of early and middle career researchers.