

Submission to the Committee of Inquiry into Research Training and Research Workforce Issues in Australian Universities

Prepared by the University of Western Australia

Declaration of interests and affiliations

The University of Western Australia (UWA) was established in 1911 and is one of the most research-intensive of Australia's universities. More than 70% of the research funding received by Western Australian universities is provided to UWA. The University has substantial industry links and collaborative funding support, and is a significant national and international contributor to innovation in medical research, chemistry, minerals and energy research, plant sciences, research on the sustainable management of natural and agricultural ecosystems, and a growing initiative in radioastronomy. The University has major partnerships with the Commonwealth science agencies, particularly the CSIRO, through Cooperative Research Centres, other joint venture arrangements and through bi-lateral research arrangements. The University has significant research partnerships with universities in the US, Europe, South America and Asia. We are dedicated to achieving international prominence in research and research training. We have one of the highest ratios of Higher Degree by Research students to undergraduate student numbers in the country. Thus, we are very conscious of the contributions that research students and early career staff make to the University's core business of research and teaching and are pleased to submit the following response to the Standing Committee's Review.

The Terms of Reference

This inquiry has been asked to address two major issues: the contribution that Australian universities make to research training in Australia, and the challenges universities face in training, recruiting and retaining high quality research graduates and staff. For the purposes of this submission, UWA believes research training refers to the developmental needs of both higher degree by research (HDR) students and early career researchers (ECRs).

The UWA Response

We will address the terms of reference by assessing some of the major structural and budgetary issues that constrain the sector. There are problems on both the supply and demand side of the operation of universities and these problems have a major influence on the abilities of universities to recruit, train and retain high quality graduates and staff.

Supply issues

On the supply side the largest single impediment is the flow of funds into the budgets of universities. Budgets are constrained by five major drivers, namely:

1. funding per undergraduate student place,
2. research grants that do not meet the full costs of research and research training,
3. poor support for specialist research infrastructure,
4. the size of the Infrastructure Block Grant, and
5. lack of indexation of academic staff salaries.

Positive changes to some of these drivers would have a very significant impact on the ability of universities to deliver training for graduates and retain high quality staff.

Despite significant increases in the productivity of universities, their terms of trade have been steadily decreasing since the late 1970s. Price per unit of student load has been declining in real terms since the early 1980s. At the same time costs have continued to rise at a greater rate than the CPI owing to the very expensive mission of universities. A significant increase in funding per student place would provide a new income stream to universities that would allow them to better meet cost demands (particularly wages) and thus compete with salaries in the private sector to retain high quality staff.

Recommendation 1: UWA recommends that there be a significant increase in the funding per undergraduate student place.

One of the major problems confronting the support of graduate student research and working conditions of staff in universities concerns the continual partial funding of research through a whole variety of schemes. While the initial intention of partial funding may have been to encourage universities to seek additional funds from industry and other sources, the result has been sub-optimal performance across the board and a distortion of priorities and effort.

When a research grant is funded through either the Australian Research Council (ARC) or the National Health and Medical Research Council (NH&MRC) the research time of the university investigators committed to the project is not explicitly covered by the grant. It could be argued that the university investigator's time is funded through the IGS or RTS block grant schemes. However, these schemes are not large enough to account for the partial salary costs of the investigators and to cover as well their intended use of training research students and early career postdoctoral fellows.

Leaving fellowships aside for one moment, investigator time cannot be funded under ARC or NHMRC schemes. This has the perverse effect that the more successful a university is in winning competitive grants the greater the costs that have to be found by the institution, and thus there is a declining

investment in the research environment for future researchers. With the numerous schemes that seek to 'leverage' university dollars as part of a successful grant, this creates major burdens for successful, research intensive universities. In the case of the NH&MRC, the creation of PSP packages, which systematically underfund staff who are to be employed on a grant, are an increasing problem. Underfunding increases the complexity of managing the grant for Chief Investigators as they continually need to seek additional funding to try to maintain the staff required to service their research work. It would be better and more appropriate if the NH&MRC allowed Chief Investigators to request funding for support staff at institutional rates and to provide one-line budgets, which at least reduce the complexity of their management tasks. The underfunding of grants needs to be addressed by increasing the amount of money allocated to the competitive grant agencies, especially the ARC.

Funding for Fellowships to support and retain research staff is another matter that needs to be addressed. The design of the NH&MRC fellowship schemes is flawed. At the moment there is a significant gap between the university levels for appointment and the qualifications needed for NH&MRC fellowships such that those classified at a higher level are only competitive for fellowships funded by the NH&MRC at a lower salary level and the gap must be met by the host organisations.

Recommendation 2: UWA recommends that there be full funding of all research grants and fellowships provided by government to universities.

Australia needs to develop a sophisticated continuum of sources to support the infrastructure needs of the university sector and thus maintain a world class environment for training higher degree by research students and attract and retain staff. The term 'infrastructure' has two uses. On the one hand it refers to the technical infrastructure (buildings and other resources) that need to be available to support research. On the other hand, it refers to block grants provided to support the operation of research within institutions.

Regarding building and equipment, the nation needs an integrated continuum of funding to support the range and maintenance of technical infrastructure required to underpin the national innovation effort. For this we support the following arrangements: the ARC LIEF program; a program like NCRIS for national research infrastructure; and the Education Infrastructure Fund for buildings. For block grants we make the following observations.

Perhaps the single biggest impediment to research growth at universities, and thus the environment for graduate student training, is the continuing small and stable size of the Research Infrastructure Block Grant. There has been a significant increase in the amount of research funding being won by universities, but the Research Infrastructure Block Grant budget has remained fixed for some time. The infrastructure needs of universities are being squeezed, and again the pressure is greater on those who are more successful. There must be an increase in money flowing to universities through the performance based block grants. Since these block grant funding mechanisms are performance based, and especially if quality as well as quantity is taken into consideration, the Government can be assured that research funds will be appropriately directed and achieve the best outcomes.

Recommendation 3: UWA recommends that the Commonwealth and the States work together to invest in research infrastructure to underpin the research and research training environment of Universities and thus increase their overall productivity.

Recommendation 4: UWA recommends that there is a significant increase in the Research Infrastructure Block Grant to enable universities to maintain the quality of their research and research training environment.

Salaries for academic staff at universities have not kept pace with those for similar professionals in the private sector. While surveys of current academic staff often reveal that salary size is not the prime motivator for working at universities, the very large increases in the cost of living, and particularly the cost of housing in Australian capital cities, means that retaining new, young staff at universities will be a problem in the future. Better indexation of Commonwealth block grants would allow universities to keep salaries closer to those available in the private sector, and thus retain quality staff.

Recommendation 5: UWA recommends that indexation of Commonwealth block grants to universities be set at a higher level.

Demand issues

The major issues for universities are the following:

1. the current booming economy, particularly in Queensland and Western Australia, the range of jobs available, and thus the lack of domestic demand for graduate student places (particularly in the sciences and engineering) and staff to remain at or join universities,
2. the shifting demographics in the general population such that there are fewer Australian students available to enter universities,
3. impediments to the recruitment of graduates from overseas, and
4. for staff, greater incentives in the forms of higher academic salaries and often better funded research environments provided by universities overseas.

To ensure that Australian universities stay at the forefront of the world's intellectual endeavours and that our nation's development is informed by the latest scientific and cultural ideas, we must develop and train the next generation of researchers and teachers, and provide a university environment that is attractive to new staff and that develops their full potential. Currently, our

research students are at the centre of UWA's research engine, with approximately 30% of all our published work including a student author. Our research-only staff, many of whom are early career researchers, are the fastest growing cohort of staff. Their developmental needs, either to become future university teaching and research academics or to pursue rich and secure careers as a full-time researchers, must be addressed with urgency as so many of the baby boomer academics retire over the next decade.

Currently, University activities directed at research training are funded through the Research Training Scheme (RTS), which is focussed on training HDR students. Since funding through the scheme is substantially driven by completions and is dependent on a rich research environment fuelled by grants and publications, it has ensured that our attention has been rightly focussed on completion rates, completion times, and publication during candidature.

However, the RTS pool has not increased with the substantial increase in enrolments across the sector. Many universities are subsidizing their research training of HDR students through other sources of income. The funds available through the RTS do not fully fund the cost of the training, with a substantial amount of supervision being provided by unpaid external and adjunct supervisors and all examination done on an honorarium basis.

In addition, the high-cost, low-cost funding divide is somewhat arbitrary and does not take proper account of the true components that go into research training. Supervision salary costs are uniform across all disciplines, as are travel costs, accommodation and IT costs, library costs, administration costs, examination costs and the like. While some high-cost projects can indeed be very costly, these costs are generally met entirely by grant funds. The result is that many of the low-cost areas find themselves falling further into poverty with each additional HDR student on the books. Our Arts, Humanities and Social Sciences disciplines train large numbers of excellent research students; the total return for a 4-year investment is woefully low.

Recommendation 6: UWA recommends that there is an increase in the number of RTS places available to Australian universities.

Recommendation 7: UWA recommends that there be a review of the high-cost, low-cost funding profile and that RTS funds better reflect the true cost of providing HDR training across all disciplines.

Given then that research training projects that require additional funds are already reliant on external grant monies, it seems reasonable that grant agencies should acknowledge this with more than stipend funds. Throughout a 4-year candidature, there are many small items of maintenance and infrastructure required: funds for field trips, replacement computing items and back-up consumables, funds to access special analyses, databases, or machines, and the like. While most of these costs, on the whole, are small, supervisors constantly have to scramble around for small amounts. It seems reasonable, thus, that those supervisors with a proven track record of successful

research training should be able to include a research training maintenance fund as a budget item in any grant application. Thus, along with a scholarship stipend item, a maintenance budget of, say, \$10,000 per annum would greatly ease the supervisory burden of day to day costs. A corollary of making such an item allowable on ARC and NH&MRC grants would be that research training should become an assessable item of track record. This would focus supervisors' minds on timely and successful completions, with quality publications as part of the research training experience.

Recommendation 8: UWA recommends that Government funded competitive research schemes, such as the ARC and NH&MRC, should allow in the budget for a research training maintenance fund of \$10,000/annum to cover basic infrastructure, travel and consumables associated with the research training. In such cases, the track record of the investigator should include research training achievements.

The most pressing issue facing UWA research students at the moment is the value of the APA award and the rapidly rising costs of living in Perth. Recent reports have indicated that the APA stipend rate will fall below the poverty line by the end of 2008. Accommodation costs have soared in Perth with the boom in the Resources Sector and the rapid increase in population. Many of our research students are forced to live at great distances from the campus, particularly inhibiting laboratory research time. In addition, APAs currently can only be awarded to applicants having an Honours 1 degree, or equivalent. However, the definition of Honours 1 is not uniformly applied across the sector, nor indeed within some institutions. This regulation, thus, is anomalous and should be removed. Universities should be able to award APAs according to their own judgement of merit. Apart from the APAs, there is a variety of other Government funding agencies supporting student stipends. The situation is complex and often difficult to understand, both for the students and the administering organisations. There needs to be an integrated approach to student income support across all relevant Government agencies.

Recommendation 9: UWA recommends that APA stipends are increased by at least 30% per annum, tax free and that they are appropriately indexed in future.

Currently, the mean completion time of a PhD at UWA is just over 4 years, aligning with the time that Universities are funded for the training under the RTS scheme. However, APA stipends are only awarded for 3 years, with a possible extension of six months. UWA believes that student stipends should match the duration of the training, and that a stipend that is awarded for 3.5 years, with a possible extension of six months, would indeed *reduce* completion times, since current completion times are impacted by the need for students to engage in paid employment once their scholarship is exhausted.

Recommendation 10: UWA recommends that APAs be awarded for 3.5 years with an optional six month extension.

International research students represent a major growth opportunity for Australian research training, for our contribution to research and development in our neighbouring countries, and for our future workforce. However, the number of available IPRS awards that fund the training of international students has been very low for a long time. UWA currently has around 2000 higher degree by research students, of which about 20% are international students. International students form the largest growing cohort of all students, and international students present the strongest demand for scholarship applications. Nevertheless, UWA's allocation of IPRS scholarships has remained relatively static for many years, at about 17 offers per annum. Since most of our IPRS awards tend to go to students in the high cost areas, to students undertaking a PhD rather than a Masters degree, and to students who complete, the current amount of funding allocated per award does not cover the full costs of the training. Increasingly, UWA is having to put more and more of its own funds towards the costs of training and funding international HDR students. While we have been pleased with the increased funding for international students that has been made available through the suite of Endeavour awards, this scheme has been complex to manage and difficult to promote at UWA.

Recommendation 11: UWA recommends an increase in the number of IPRS awards to reflect the growth and demand in our international student cohort, and believes that each award should fully fund the fees of the awardee.

Recommendation 12: UWA recommends a review of the Endeavour Scholarship Programs to improve the accessibility and international competitiveness of the scheme.

Further barriers that are faced by international students occur because of various visa restrictions. Whilst domestic students can suspend their research training for up to 12 months, international students cannot. Nor can they undertake research training on a part-time basis. This both impedes their capacity to earn additional income to support their studies and creates considerable difficulties around parenting issues and other such events that typically arise throughout the 4-year duration. UWA believes that Australia's capacity to expand its cohort of international research students could be greatly aided by more flexibility around visas.

Early career staff face their own special challenges and most universities are only just beginning to recognise their developmental needs. UWA has established an internal grant scheme available only to ECRs in order to develop their grant writing skills. ECRs have access to specialised teaching training, and they are provided with mentors to develop their academic careers. Nevertheless, ECRs on research-only positions funded through Australia's research grant agencies endure a precarious and vulnerable career.

UWA applauds the relatively recent introduction of the ARC's 75%:25% scheme, allowing researchers to undertake a 3-year research program over four years with an opportunity to undertake some teaching funded by the institution. This provides ECRs with the opportunity to build

a teaching portfolio without sacrificing their research track record and future competitiveness with grants. However, ECRs on a 100% grant salary are frequently either not offered teaching opportunities, however light, or they do undertake some teaching but are not paid for their work. Typically, ECR researchers would develop their supervision skills with Honours students, and may like the opportunity to give one or two lectures on a topic that is central to their research activities. Note that in the United States mentoring and development of ECRs is mandatory for NSF funded grants.

Recommendation 13: UWA recommends that all ECRs have access to developmental programs and that universities clarify the circumstances in which they would be paid for their teaching services.

For both HDR and ECR researchers, universities need to provide specialised training in the skills required of an internationally competitive researcher. These include knowledge and skills to deal with

- Intellectual Property and the development of spin-off companies;
- Training in Project Management and Leadership;
- Specialised IT training in the development of online teaching and research materials, including but not limited to database development and management, webpage development, the use of collaborative technologies and all aspects of eResearch technologies;
- Training in Research Integrity and the legislative requirements surrounding accountability and reporting within the Australian and international framework;
- Grant writing; and
- Training to ensure that their research practices can be flexibly transferred to other research environments such as Government agencies and industry.

UWA has worked with the Commercialisation Training Scheme for HDR students, with limited success. Demand for the program has been low and it is questionable whether it is being provided at the right time in the research training cycle. CRCs also provide specialised industry training for HDR students, again with mixed results. The idea of a structured program of training with diploma accreditation upon successful completion is good, but the scheme should be extended to ECRs, and additional training modules should be developed to cover the items mentioned above, among others. UWA acknowledges the Go8 work on its Future Leaders modules but we believe that more can be done to enhance the quality and value of modern generic skill development.

Recommendation 14: UWA recommends a review of all government-funded programs that provide industry training for HDR students, with the aim of expanding the training to other modules and making it available to ECRs.

The Western Australian Perspective

Finally, UWA believes that there are certain aspects to Research Training and to the recruitment and retention of future research staff that are specific to Western Australia.

The first of these relates to the **current cost of living**, and specifically the challenges posed for **accommodation** of research students and new staff. Costs have risen dramatically with the recent resources boom, and growth in HDR numbers has been strongest among international students. This places particular constraints on the University in finding appropriate accommodation for our international research students, many of whom come to Australia with young families, and who continue to have children during their stay in Australia. New staff at the University find it impossible to secure affordable housing near to the University, or indeed to find an affordable house to buy anywhere. Both staff and students are now living at substantial distances from their workplace (over 30kms away in some cases), making daily commuting expensive and time consuming. Cost of living and accommodation are likely to be issues across the whole country, because academic salaries and student stipends have not kept up with price increases. However in Western Australia these problems are particularly acute and are seriously impacting on the University's ability to deliver on its mission to be an international world-class university.

Additionally, local student demand is met by strong **competition for jobs** by a booming resources sector and very low unemployment rates. The University's capacity to grow, as it should in the face of strong **population increases**, is hampered. While undergraduate student demand remains high, domestic postgraduate research numbers are flat. This can be directly linked to low student stipends and high salaries easily available in industry. However, without strong demand in our postgraduate student numbers we will be hampered in our attempts to train future research staff for our universities.

Another factor impacting on the attractiveness of Western Australia for research students and staff is the lack on **research infrastructure** in the State. Particularly ICT infrastructure is not as strong as it should be, and access to major research facilities is hampered by distance, long travel times and expense. It is important that national infrastructure programs such as NCRIS and HEEF deliver resources nationally and fairly.