SUBMISSION FROM THE REGIONAL UNIVERSITIES NETWORK (RUN)

TO THE REVIEW OF THE RESEARCH TRAINING SYSTEM

Professor Peter Lee, Chair, RUN

Executive summary

Regional universities play a key role in research and research training, innovation, productivity and national development. The Regional Universities Network (RUN) is a group of six regionally-based universities comprising CQUniversity, Southern Cross University (SCU), Federation University (FedUni), University of New England (UNE), University of Southern Queensland (USQ), and the University of the Sunshine Coast (USC).

Research undertaken at RUN universities is regionally embedded and applied but internationally engaged. RUN universities play a critical role in providing high quality research training opportunities in regional Australia in a supportive and individually structured environment. The research performed by higher degree by research (HDR) students makes a major contribution to the research output of RUN universities.

RUN universities:

- Collaborate extensively in research and research training.
- Perform high quality research and research training that is regionally focussed, strategic, and community and industry engaged.

RUN universities support:

- High quality research training that is flexible and innovative, recognises the diverse needs of higher degree by research (HDR) students, the community and industry, and supports regional innovation and development.
- Strengthening university – industry collaboration.
- Recognition that industry placements and coursework have implications for HDR completion times and resources.
- Additional resources for research training and continuing the policy that domestic HDR students not be required to pay fees.
- Amending the formula to allocate Research Training Scheme (RTS) funding to include student load.
- Better opportunities for candidates from disadvantaged backgrounds.
- Assessing the quality of the research training environment in a way that recognises the diversity of factors involved (including regional and industry engagement), and which is forward looking and not retrospectively focussed.

RUN universities oppose:

- The imposition of additional requirements for HDR training on a mandatory, one-size fits all basis.
- Using Excellence in Research for Australia (ERA) as a measure of the quality of the research training environment.

Introduction

Regional Australia plays a vital role in national prosperity and productivity. It is the leading source of Australia's largest export industries: agriculture, mining and tourism. The Regional Australia Institute (RAI) estimates that regional Australia accounts for around 67% of national earnings[1]. As a very substantial component of the Australian economy, it is clearly in the national interest to maximise regional Australia's contribution to innovation.

Research is a fundamental part of being a university and research training is a vital element in the research effort. Regional universities play a key role in research and research training, innovation, productivity and national development. They drive regional economic, social, cultural and environmental development, and help to unlock human potential of their regions, and thus the nation[2].

The Regional Universities Network (RUN) is a group of six regionally-based universities - CQUniversity, Southern Cross University (SCU), Federation University Australia (FedUni), University of New England (UNE), University of Southern Queensland (USQ), and the University of the Sunshine Coast (USC). The research undertaken at RUN universities is regionally embedded and applied but internationally engaged. RUN universities recognise the importance of translating research outputs to benefit Australians. Much of the research and associated research training undertaken at RUN universities is translational, applicable and solution-focused, often conducted in very close partnership with the users of the research.

RUN universities play a critical role in providing research training opportunities in rural and regional Australia. They offer high quality research training in a supportive and 'individually structured' environment. The research performed by higher degree by research (HDR) students makes a major contribution to the research output of RUN universities.

It is vitally important to regional Australia and its communities that research training continues to flourish at regional universities.

RUN universities and research training

- *RUN universities collaborate in research and research training.*
    - They are developing research flagships in areas of research strength and strategic, regional importance, focussing initially on precision agriculture and water research, and planning to extend this to regional health. A central feature of the flagships is a focus on research training, with participating universities supporting scholarships for high quality HDR candidates to work on specific projects in outstanding research training environments.
    - RUN universities also support an active RUN Deans and Directors of Graduate Studies group to promote and share best practice. They are also developing modules for a joint PhD training program, and proposing the development of a mid-career researcher program, and the delivery of other training initiatives such as in research commercialisation.
- *RUN research and research training is regionally focussed, and community and industry engaged.*
    - Most RUN universities have strengths in agriculture and rural health research – issues that are crucial to the economic and social fabric of their communities, and aligned to the Government's national science and research priorities. These are fields in which there are

[1] Regional Australia Institute analysis based on ABS data for 2011
[2] RUN (2013) *RUN: Engaging with regions; building a stronger nation* downloaded from http://www.run.edu.au/cb_pages/news/RUN_regional_impact_study.php

projected shortfalls of suitably qualified graduates and researchers. RUN universities are delivering research training in these fields.
    - For example, USQ's Institute for Agriculture and the Environment is currently training 145 PhD students in agricultural science. Many of these students can be expected to play an important role in maintaining the future productivity of Australia's agricultural systems. However, while the numbers are encouraging, further significant increases are required to help keep regional Australia prosperous.
    - RUN university HDR candidates often have supervision teams containing an industry-based supervisor. This ensures appropriate industry engagement in these candidates' research training.
- *RUN universities also deliver research and research training in fields other than agriculture and rural health, which are of strategic, regional importance.* The opportunity to pursue research training within a regional context helps create economic and professional opportunities and a vibrant and culturally diverse community. The opportunity to study a PhD on a part-time basis can help to attract and retain good professional staff to businesses in regional areas.

PRODUCING HIGH QUALITY RESEARCHERS

1. **What are the research skills and experiences needed to be an effective researcher?**
2. **What broader transferable qualities do HDR graduates need to develop to succeed in a wide range of career pathways? Should these skills be assessed, and if so, how?**
3. **What other broader capabilities should HDR graduates develop during their research training?**

We should aspire to have a diverse population of researchers with a diverse set of skills and knowledge and diverse experiences and backgrounds. This increases the robustness of the system and the likelihood of there being researchers able to contribute to solving any particular future problem.

The skills and capabilities of HDR graduates include:

- Being highly confident and competent researchers, highly analytical and critically reflective, excellent problem solvers and suitable for future leadership roles.
- Possessing highly developed communication, collaboration, and networking skills. HDR graduates must be able to communicate with non-specialists and non-researchers AND with specialist researchers from the same and different disciplines. They must be able to apply evidence-based decision making and be able to utilise their communication skills to influence decision makers.
- Conducting ethical and responsible research.

Graduate destinations include academia, industry, government, as well as other professional and personal pursuits such as managing a consulting business, or undertaking a degree for personal reward and development. Some HDR candidates do not pursue their degrees with an academic or research-intensive career pathway in mind so training must include a suite of generic skills that equip graduates to assume competence in leading society.

A demonstration of an appropriate mastery of skills is important rather than a graded assessment of training programs. The use of an evidence-based portfolio or training resume to document the accrual of skills could be a useful way of monitoring or acknowledging completion of skills development training.

CONTRIBUTING TO AUSTRALIA'S FUTURE PROSPERITY AND WELLBEING

4. **What skills and capabilities do employers in Australia need from HDR graduates?**
5. **What research skills and capabilities are needed to ensure Australia's research system remains internationally competitive?**
6. **What research skills and capabilities are needed from HDR graduates to ensure Australia is ready to meet current and future social, economic and environmental challenges?**

The research skills and capabilities required of HDR graduates are many and varied, and should include:

- The ability to formulate meaningful research questions and to address these by appropriate existing methods, and/or to be able to develop suitable methods.
- Communication and collaboration skills.
- Discipline-based skills. These skills are essential and should not be diluted by the inclusion of 'soft' skills training in the research training program (i.e. inclusion of 'soft skills' development should support rather than compete with the requirement to develop research-discipline specific skills).

The HDR research training experience is the beginning of the individual's development as a researcher, not the culmination. Universities should continue to support the development of researchers and their skills beyond their research degrees.

RESEARCH TRAINING SYSTEM

7. **What features of the research training system should be retained to ensure our graduates are internationally competitive?**
8. **How should the research training system be structured to produce high quality researchers who can contribute to Australia's future prosperity and wellbeing?**

The discussion paper indicates that Australian graduates are well respected in the international community. While we cannot rest on our laurels, we should be careful introducing major changes which may damage our current good standing.

Australia needs to support the development of a sufficient number of individuals with a diverse set of skills that can be drawn upon in different circumstances. A one-size fits all approach for Australian HDR graduates is both unachievable and undesirable. The goal should be to have a diverse population of researchers with a diverse set of skills and knowledge and diverse experiences and backgrounds. This creates a robust system with a greater capacity to address current and new and unexpected problems.

The HDR experience comprises two simultaneous experiences for the researcher (with two equally important outcomes for Australia). Both aspects are required for the award of the degree.

- *Experience 1:* Engagement in a research problem with a supervisory team to model the development and application of 'hard' research-based skills. The researcher learns how to develop and solve a research question and how to communicate research outcomes. The main outcomes are the research itself and the researcher.
- *Experience 2:* Explicit exploration and development of transferrable 'soft' research skills e.g. on collegiality, teamwork, collaboration, and ethical conduct, etc. The researcher learns how to connect and engage with others inside and outside the University in order to facilitate and improve research. The researcher also learns the value of research for society. The main outcome is a better connected

researcher who is a better communicator and better placed to form collaborative and successful teams.

Both experiences are important and any training scheme should explicitly acknowledge them.

Government support for domestic HDR student places

Adequate funding is essential for a high quality research training system, and for this reason RUN supports increased funding through the Research Training Scheme (RTS). Increased industry funding for PhDs would also achieve this objective.

In order to maintain and enhance further the diversity of Australia's research training system and provide research capacity in issues of critical importance to Australia's regional and rural areas, it is essential for regional universities that they receive adequate funding for research training.

No tuition fees should be imposed upon domestic HDR candidates. Fees would result in decreased participation by candidates from non-traditional backgrounds, socially disadvantaged students and women. If it is not possible to retain the provision of no tuition fees for all domestic candidates, support should be provided for 'meritorious' candidates from non-traditional backgrounds.

The research training environment

RUN universities offer high quality research training programs in good research training environments that align with regional interest and concerns. For example:

- Students are able to work in research priority areas which serve their communities and regional industries. Much of the research is applied or translational in nature, with national and international applicability and rigour.
- HDR candidates mainly address research issues (whether social, economic or environmental) that have a strong regional context. By having their research base located within regional areas rather than in distant city-based universities, RUN HDR candidates enjoy a clear natural advantage in conducting regionally-relevant research which can only be performed in these environments.
- RUN universities distinguish themselves from others and assume leadership by providing cadetships and internships for people involved in regional and rural industries.
- Many of the higher degree students at RUN universities are drawn from regional Australia. On completion of their higher degrees many remain in the regions, thus increasing the social, cultural and intellectual capital of their communities.

In assessing the quality of the research training environment, it is necessary to take account of a wide range of factors including student satisfaction, time to completion, engagement with industry, employment outcomes, adherence to national guidelines and codes of practice. ERA is not a suitable mechanism as it is a retrospective measure, doesn't comprehensively pick up research engagement with industry, and does not recognise the need to grow research areas of strategic, regional importance.

Coursework elements in research training

Across the Australian higher education sector, a variety of approaches are being used to incorporate coursework into research training. Many of these approaches are achieving good outcomes. RUN universities

are moving to incorporate more structured research training. They also support flexible approaches and oppose the introduction of nation-wide compulsory coursework units.

RUN universities recognise that there are significant up-front costs incurred in developing and delivering coursework programs to HDR students. Consideration should be given to adjusting the formula to allocate funds under the RTS to reflect student load as well as completions, possibly on a 30:20 per cent basis. (Student completions currently represent 50 per cent of the current weighting for funding under the RTS.)

Industry relevant training

Much of the research conducted by RUN universities is industry-focused, industry applicable and solutions oriented. Our research training reflects this approach. For example, universities in the RUN network have strong partnerships with rural research and development corporations in the grain, cotton and sugar industries, whereby PhD students are sponsored to conduct research into issues of key importance to the relevant industries.

RUN recognises the important roles played by CSIRO, Cooperative Research Centres and Industry Training Centres in offering opportunities for PhD students to work in an industry focused environment.

RUN notes that the following suggestions would strengthen engagement between universities and industry:

- Encouraging universities to offer industry internships, noting the substantial investment this requires in terms of time and money. Industry placements that are not aligned with the research project are not generally supported due to their impact on completion times.
- Establishing a new program of industry scholarships which would support recipients to work on an applied industry project as core to their research training. The program could be jointly funded by Government and industry, with industry contributions attracting favourable taxation treatment.
- Encouraging small to medium enterprises (SMEs) and regional organisations such as local councils to collaborate with universities by providing support for PhD candidates that are embedded in the industry. SMEs often have little interest in becoming involved in research and research training as they have limited resources. The support could be provided as a sub-scheme within the RTS or Joint Research Engagement (JRE) program or as a separate program in its own right. The program should be broader than the existing JRE Engineering Cadetships Scheme and should cover all disciplines.
- Adopting a new metric to reward HDR places sponsored by SMEs for use in e.g. the Joint Research Engagement Scheme.
- Encouraging universities to offer training in management and entrepreneurship to a greater number of HDR students than is currently the case.

RUN notes that industry is calling for research degrees to better meet its needs. Industry should be encouraged to make a greater contribution to the overall cost of research training, either in cash or in-kind.

International HDR students

RUN universities support greater flexibility to provide Australian Postgraduate Awards (APAs) and RTS places to high quality international students. Universities should have greater flexibility to invest to achieve the best research training outcomes.

There is also a need for a properly funded support model for English language and academic skills development for international candidates notwithstanding the fact that these candidates must meet expected quality standards and minimum English language requirements prior to admission.

Supervision and assessment arrangements

RUN universities support panel supervision (rather than a single supervisor) although prescriptive conditions for panels are not supported. Institutions need the flexibility to appoint a panel that suits the discipline, topic and any applicable cross-cultural needs of the candidate, and to allow for industry contributions as appropriate.

RUN universities oppose the introduction of an oral defence of a thesis as an additional compulsory requirement for the award of a research degree. However, under some circumstances, an oral defence may be usefully included as an option. As a general principle, the benefits of incorporating an oral defence do not outweigh the costs. Presentation skills – a claimed benefit of an oral defence – are better developed by other means.

The concept of an oral defence could be transitioned from being a part of the examination process to be used instead as an internal tool to assess how well a candidate has responded to the examiner's comments for thesis revisions.

9. How can entry and exit pathways to and from research training be better structured?

Exit pathways from research training would be better structured through the award of formal qualifications. Candidature milestones or checkpoints could provide exit pathways for those who do not wish to continue to the highest level of research training. Such candidates should be recognised for the portion of the training they have been undertaken with formal exit qualifications, e.g. graduate certificate, graduate diploma, and Masters. Honours could be viewed as the first year of a standardised 'five year graduate training program' culminating in a PhD. The second year could result in a Masters. Coursework undertaken in the five year program would be largely conducted in the first two years.

10. How can barriers to participation in HDR programs be overcome so that more candidates from non-traditional backgrounds, including indigenous students, undertake research training?

RUN universities play an important role in encouraging candidates from non-traditional backgrounds to undertake research training. For example, students from regional backgrounds are able to participate in research training while living and working in regional communities, and engage in regionally relevant research which has international impact, often in collaboration with industry. The RUN National Flagship initiatives are a case in point.

The provision of tailored, candidate-focussed support programs for students from non-traditional backgrounds would encourage more of these students to undertake research training. If Government values increased participation by students from equity groups in HDR programs, it should provide additional resources to support their training. For example, APAs are generally offered on a full-time basis, except in extraordinary circumstances, and part-time stipends become taxable. This is a form of indirect discrimination against people with disabilities, carers, and those whose complex living situations mean they cannot undertake full-time study.

RUN acknowledges that women researchers continue to be under-represented at senior levels, particularly in some disciplines (e.g. most STEM disciplines). Greater participation by women should be encouraged with resources and incentives.