

Foreword



In 2007, the Council of Charles Sturt University (CSU) reaffirmed CSU's role as the National University of Inland Australia.

At first glance, the idea of being both 'national' and 'inland' may seem contradictory. This is not the case.

CSU is firm in its belief that the people of inland Australia have a right to access a 'nationally' recognised standard of higher education and research in their own backyard.



The word 'Inland' describes our geography – being a 'University' defines our mission.

Like all Australians, our students define their expectations of CSU according to their aspirations – the aspiration to be a journalist, actor, artist, theologian, economist, games designer, dentist, veterinary scientist, agronomist, physiotherapist or nurse. They aspire to find new ways to feed our growing world population in environmentally sustainable ways, to use water more efficiently, to reduce the incidence of mortality from cardiovascular disease and to resolve entrenched religious conflict.

While many of our graduates aim to contribute to their inland communities through work and applied research, others aspire to be the Chief Executive Officer of the Kelloggs Company in the United States, the News Anchor of Aljazeera English in Malaysia, the Chief Executive Officer of Sky News in Australia, the head of Marketing for Nestle in Switzerland or standing before the world to accept an Oscar for Best Animated Feature Film in Hollywood.

These aspirations are not limited by our geography, but only by the limits of the imagination of our students.

However, our geography does provide us with a strong sense of direction and purpose.

'Inland' is where we work and where we live. It is the historic heart of our nation's economic prosperity and character. It is the food bowl, the energy source and the primary producer for our nation. It is the source of a major part of our nation's gross domestic product and international exports.

'Inland' is the home of great innovation and invention – our remoteness, our variable climate, our participation in a competitive global economy and the challenge of ensuring access to critical services for smaller populations have driven us since the time of settlement. CSU is an inheritor and custodian of this tradition.

This tradition has stimulated reform across Australia throughout our history. As noted by the Productivity Commission in relation to health services (2005): " ... [rural] areas have been an 'incubator' for developing and testing new models of care and expanded scopes



of practice. Many such innovations have the potential to provide the basis for system-wide changes in health workforce arrangements in coming years. Indeed, for this reason, the Commission considers that it is very important that health workforce frameworks facilitate two-way articulation of policy change and workplace innovation between the major population centres and rural and remote Australia.”

But it would be wrong to focus solely on the historic achievements of inland and rural communities.

As a member of our inland communities, CSU is tasked with a special responsibility to address itself to the resolution of the specific challenges that beset our communities now and in the future:

- equitable access to local educational opportunities on the same terms as all Australians;
- the continuity of supply and retention of qualified professionals in inland and rural Australia;
- growing the productivity of our largest employer and economic sector – agriculture – while sustaining our environment and assuring food security for our nation and the world;
- conducting research that addresses the unique challenges of inland Australia and which is directly undertaken in partnership with inland and rural communities;
- maintaining and improving the health and well-being of inland and rural Australians.

The CSU Agenda addresses itself to these issues. It has not been prepared as a set of demands, but as a means to explore the opportunities for addressing these challenges.

It is not intended as a comprehensive statement of our priorities or strategies [we could have easily have addressed this paper to the issues of teacher education, water sustainability and IT training] but the beginning of a larger Agenda – a means to start the discussion with our communities, government, industry and the professions about how we can help to Grow Our Communities through education and research in the future.

Professor Ian Goulter
VICE-CHANCELLOR AND PRESIDENT
Charles Sturt University

Growing Our Communities

CSU - an agent of economic and social development in Inland Australia



CSU plays an important role in the life of our inland communities – as an agent of economic and social development of Inland Australia.

Workforce Development

Retaining skilled professionals is critical to the provision of essential services and the amenity of inland and rural Australia. The loss of skilled professionals has a domino effect across inland communities and their economies. In critical areas such as health services, it can lead to a systemic loss of professional services and support structures essential to community sustainability and growth. This is why CSU places such importance on the training of professionals for practice in inland Australia across all our fields of endeavour.

It is also why CSU recruits rural students to its on-campus programs. It has been proven time and again that rural origin is the major determining factor in the decision of graduates to commence professional practice in a rural location. This is why 75% of all our on-campus students come from a rural home location.

The impact of our location is marked in terms of our retention of graduates in inland and rural Australia. A study by the Western Research Institute on the destination of on-campus graduates after completing their professional studies, found that 73% of graduate students from CSU who were originally from a regional home location took up initial employment in a regional location. As important, 28% of graduate students from CSU with a metropolitan home location took up initial employment in a regional location (Western Research Institute, 2006).

Our capacity to retain graduates in practice in inland and rural Australia peaks in the critical area of agricultural science and management with 88% of agriculture and environment graduates with a regional home location taking up employment in a regional location and 44% of graduates with a metropolitan home location taking up employment in a regional location (Western Research Institute, 2006).

Similarly, more than 70% of health graduates with a regional home location took up employment in a regional location and more than 20% of graduates with a metropolitan home location took up employment in a regional location (Western Research Institute, 2006).

Since 1995, the percentage of regional students initially employed in a regional location has grown at an average rate of 1.3% per annum (Western Research Institute, 2006).

To demonstrate the significance of this achievement, between 1995 and 2000 (before the first CSU pharmacy graduates) an average of 3 metropolitan trained pharmacists located to regional areas in NSW each year. Every year since CSU's first pharmacy graduates, 35 graduates or more have chosen to practise in rural and regional settings. That is, 117 new pharmacists in inland and rural Australia in just 3 years. Without CSU, many more



towns and communities would not have a local pharmacist, leading to a further decline in professional services across inland Australia.

By offering locally such a broad-spectrum of programs, CSU is helping to sustain and grow our communities.

Economic Development

In a study by the Western Research Institute, it was found that the economic impact of CSU expenditure, combined with the expenditure of staff, non-local and international students, on the regions surrounding its four main campuses was \$264 million in gross regional product, \$164 million in household income and over 3,100 full-time equivalent jobs (FTE) when flow on effects are taken into account (Western Research Institute, 2005).

To put these findings into perspective, CSU and international and non-local students attending the University generate the equivalent of 9% of Wagga Wagga's employment in the Murrumbidgee statistical division; the equivalent of 12% of Bathurst's employment in the Central West statistical division; and the equivalent of 3% of Albury-Wodonga's employment in the Murray and Ovens-Murray statistical divisions (Western Research Institute, 2005).

These findings do not take account of CSU's facilities and campuses in Orange, Canberra or Goulburn.

To look at the contribution of CSU to the economies and employment in our inland communities in another way, in a recent study on the economic impact of the establishment of two new programs by CSU (dentistry and oral health), the Western Research Institute found that the construction phase of the project will generate \$52.6 million in gross regional product, \$24.7 million in household income and 906 FTE jobs when flow on effects are taken into account. This is the total economic effect of just two new programs! (Western Research Institute, 2007)

Once the programs are fully operational, it is estimated that they will generate annually \$12.3 million in gross regional product, \$8.27 million in household income, 227 FTE jobs and bring more than 200 new students to our inland campuses when flow-on effects are taken into account (Western Research Institute, 2007).

This does not take account of the economic, social and health benefits flowing from the training and graduation of a new generation of dentists and oral health workers for the sustainability and growth of our communities, nor the effect of a state-of-the-art facility in encouraging existing health practitioners to remain in inland Australia.

By operating our campuses right across inland NSW, CSU is helping to sustain and grow our communities.

Social Development

CSU contributes to the artistic, cultural and social development of our communities, within the limits of its resources, across a broad range of fields.

CSU annually grants more than \$500,000 to community organisations to promote artistic and cultural activities in inland Australia

CSU has been a long time contributor to the Mitchell Conservatorium, the Macquarie Philharmonic, Murray Conservatorium, Riverina Conservatorium of Music, and more recently the Orange Regional Conservatorium, supporting the aspirations of our young musicians across inland NSW.



As the broadcaster of National Radio News, CSU offers a subscription news service for rural and regional radio stations across Australia using its own resources and the services of Australian Associated Press and Sky News Australia. As the license holder for 2MCE, CSU provides a community radio service to central western NSW and provides members of the community and students with the opportunity to learn about broadcasting.

CSU is also a principal stakeholder and major contributor to the work of the Australian Minerals and Fossils Museum in Bathurst (the Somerville Collection). In cooperation with Bathurst Regional Council, the Australian Museum and NSW Ministry for the Arts, CSU spearheaded the establishment of this major museum collection in inland NSW which is now recognised as one of the most important mineral collections in Australia.

Through our support of the Riverina Theatre Company in Wagga Wagga and the operation of the Ponton Theatre in Bathurst, CSU supports the development of the performing arts and theatre across inland NSW.

Through our financial and in-kind support of Arts Out West, CSU assists the promotion of regional arts and culture.

To help to meet the health needs of our communities in areas of critical shortage, CSU has established a range of primary health clinics that are accessible to our communities. CSU has established a Podiatry Clinic and a Diabetic and Cardiovascular Screening Clinic in Albury-Wodonga, a Functional Rehabilitation Clinic in Bathurst and is establishing Dental Clinics in Albury-Wodonga, Bathurst, Dubbo, Orange and Wagga Wagga to provide health services to our inland communities in critical areas of need.

By working with a range of organisations in the promotion of the arts, culture and social development across inland NSW, CSU is helping to sustain and grow our communities.

Educational Development

CSU is a broad-spectrum University. As the major provider of educational and research opportunities to our inland communities, CSU is committed to providing a full range of programs that meet their needs and the aspirations.

CSU's mission extends to all our inland communities, as well as our immediate campus towns.

For example, to address higher education participation rates in communities outside our major campus towns, CSU has committed to the development of a *Western Regions Strategy*.

Participation rates in higher education in the western regions of NSW are significantly below NSW State averages. In a 2004 study by CSU, using the services of the Spatial Data Analysis Network and data from the Commonwealth Department of Education, Science and Training National Statistics Collection, it was found that total participation in higher education in NSW was 4.3%.

For CSU's inland communities, however, higher education participation rates are significantly lower and continue to decline the further you move away from regional centres where CSU has its major campuses:

Orange	3.5%
Northern Tablelands	3.4%
Albury	3.3%
Bathurst	3.2%
Wagga Wagga	3.2%



Dubbo	2.9%
Goulburn	2.9%
Cowra/Parkes/Forbes	2.5%
South Coast/Snowy	2.3%
Far West	2.1%

Through our commitment to the operation of distributed campuses across major inland centres, CSU has significantly increased access to and participation in higher education across our inland communities over the last 2 decades.

In just the last 10 years, CSU has opened new campuses in Dubbo and Orange to further enhance local access to higher education opportunities to inland communities. Through our extensive distance education programs, adult learners and students from remote communities are able to access high quality educational services locally.

Access to, and participation in, higher education is critical to the social and economic development of our inland communities and to the development of individuals. While multi-campus universities located in rural areas have made a significant contribution to higher education participation over the last 2 decades, CSU acknowledges there is a need to continue to extend our reach to other inland communities where participation rates remain low.

The aim of a *Western Regions Strategy* is to identify the causes of lower participation and to develop sustainable long term initiatives to enhance access to, and participation in, higher education principally in the regions west of the Bathurst / Orange / Wagga Wagga / Albury line. The Strategy will be developed in collaboration with TAFE and local government areas and will identify tangible approaches to address the underlying causes of low participation in these communities.

CSU has already initiated a number of programs to begin to address access and participation outside our campus towns including:

- collaboration with Riverina Institute of TAFE to provide study centres in TAFE facilities in Griffith (Business, Nursing) and Deniliquin (Social Welfare/Social Work);
- creation of scholarships and enabling programs targeted at rural and remote communities to address some of the financial barriers to access and participation;
- development of close links through clinical placements and practicums with Schools, health care and community organisations.

The Strategy will be closely linked to CSU's Indigenous Education Strategy and our research programs in agriculture and water sustainability to ensure that it is relevant to the interests and needs of these communities.

CSU will be seeking support from both the Commonwealth and State Governments to the development of the Strategy and support of initiatives arising from the Strategy to encourage increased participation and the social and economic development of western inland communities.

By working with all our inland communities to promote improved access to educational opportunities, CSU is helping to sustain and grow our communities.

Growing our Agriculture

Reforming Agricultural Research and Education



Background

Agriculture and our economy

1. Agriculture is a critical part of Australia's economy representing 3% of Gross Domestic Product (GDP) and around 22% of Australia's merchandise exports (Australian Farm Institute, 2005; Productivity Commission, 2005a).
2. As other sectors of the economy have grown, it can no longer be said that Australia 'rides on the sheep's back'. However, the continuing importance of agriculture to Australia's economic health and prosperity is often understated.
3. Using a broader measure of economic activity, when pre and post-farm gate economic activity is taken into account, agriculture represents 12% of GDP. Using this measure, agriculture is the largest single sector in the Australian economy. This is why climatic events such as drought have such a disproportionate economic impact relative to its perceived contribution to GDP (Australian Farm Institute, 2005).
4. In employment terms, agriculture is central to the sustainability of inland and rural communities. Around 17% of those employed in inland and rural Australia are directly engaged in agricultural production. In 2007, it was estimated that more than 670,000 Australians were employed, or dependent on someone employed, in agricultural, forestry and fishing industries (Agribusiness Australia, 2007). Around CSU's campus towns of Wagga Wagga and Albury (Murray-Murrumbidgee region) the farm dependent economy is worth about \$1.7 billion (or 26% of Regional GDP) and supports about 41,000 jobs or some 33% of the workforce in the region (Australian Farm Institute, 2005).
5. Australian agriculture is one of the most economically and environmentally productive in the world and is one of the lowest subsidised. The Organisation for Economic Cooperation and Development has reported that Australian agricultural producers received one of the lowest levels of government subsidies in the world at around 4% PSE (the proportion of a farmer's gross income coming from subsidies and support measures) compared to up to 63% PSE for one of our major trading partners.
6. There are around 6.5 billion people in the world today and this is estimated to climb to 9.3 billion by 2050. The World Health Organization estimates that population growth and improved standards of living in the developing world will significantly impact demand for agricultural production, with per capita consumption of livestock products worldwide estimated to rise by 44% by 2030 and poultry consumption predicted to grow even higher. If negotiations to reduce global agricultural subsidies are successful, agricultural trade worldwide is estimated to increase by around AU\$330 billion by 2020. Growing demand for food worldwide is a major opportunity for



Australia's agricultural sectors and our national balance of trade (World Health Organization, 2007).

7. With no increase in the availability of arable land worldwide and probable decreases; increasing competition for water; the conversion of arable land to support carbon sinks; the diversion of agricultural production to alternative energy (such as biofuels); expanding global price competition due to foreign government subsidies; the impact of climate variability, and; growing bio-security threats (CJD, Bird Flu, Foot and Mouth Disease, Blight) there will need to be a significant and sustained increase in agricultural productivity and associated research to maintain current domestic and international food security and meet future projected demand without serious environmental degradation.

Agricultural education

8. Despite the importance of agriculture to Australia's economic future, and demand for agricultural skills, enrolments in agricultural education programs are in serious and unsustainable decline.
9. Student numbers in agricultural courses declined by 19 per cent in the three years to 2004 (Agriculture and Food Policy Reference Group, 2006).
10. Agriculture, like most other sectors of the economy, has an ageing workforce. The average age of farmers is around 54 years presenting significant issues for the future workforce needs of the sector as enrolments decline.
11. In a recent report by the Commonwealth House of Representatives Standing Committee on Agriculture, Fisheries and Forestry titled *Skills: Rural Australia's Need - Inquiry into Rural Skills Training and Research* (2006) the Committee noted that "evidence received by the committee during the course of its inquiry indicated that there are severe skills shortages in rural industries and significant gaps in our capacity to respond to those shortages."
12. The Committee noted the findings of the NSW Legislative Council Standing Committee on State Development titled *Inquiry Into Skills Shortages In Rural And Regional NSW* (2006) which stated: "The evidence before the Committee clearly shows that there are extensive skills shortages in rural and regional NSW across almost all sectors of the economy including ... [the] agriculture sectors."
13. Agricultural employers also indicate that agriculture graduates from metropolitan universities are reluctant to accept employment beyond the fringes of the metropolitan centres.
14. As agriculture has become less attractive to prospective tertiary students, the agricultural programs in some tertiary institutions have become less viable.
15. It is generally accepted that there are too many agricultural education providers in Australia for current demand, but rationalisation of offerings is not progressing at a quick enough pace to allow the consolidation of viable programs. According to the Department of Education, Science and Training, the universities with substantial domestic undergraduate enrolments for agriculture (that is, greater than 800 students) are CSU, University of Melbourne, University of Queensland and University of Adelaide.
16. While rationalisation is needed, it is recognised that Australian undergraduates are generally not mobile across State boundaries (and to a lesser extent within State boundaries) and thus any rationalisation must take place predominantly within State borders with a strong focus on distance education as a mechanism to deliver

solutions to both individuals working in agriculture who wish to extend their existing skills and to more remote locations.

Agricultural research

17. Research is critical to sustaining and improving agricultural productivity. In 2005, the Productivity Commission found that over the last 30 years productivity growth in agriculture outstripped growth in all other 'market' sectors of the economy, except for the communications sector (Productivity Commission, 2005a).
18. A study by the Australian Farm Institute demonstrates the critical importance of research investment to productivity growth in agricultural production. The study estimates that growth in agricultural productivity would have been halved over the last 50 years without domestic and foreign direct investment in agricultural research (Australian Farm Institute, 2007)
19. Despite public funding of agricultural research and development in Australia exceeding \$500 million annually, and Australia being a world leader in agricultural productivity and innovation, Australia does not have a single University that is internationally ranked in the primary field of agriculture.
20. This is reflected, in part, by the relatively low level of postgraduate agricultural enrolments of overseas students in Australian universities relative to other disciplines. Australia is not viewed as a premier destination for agricultural education or research. Higher education is now Australia's fourth largest export industry and increasing international agricultural enrolments is a clear opportunity for growth of this sector.
21. At least part of the explanation for the failure of Australia to promote its leadership in agricultural research and education is its failure to coordinate and consolidate its significant public investment in agricultural research and development.
22. While public co-investment in research and development corporations has been highly successful and should continue under current arrangements, a significant proportion of public investment in agricultural and allied research is still undertaken in government agricultural research agencies rather than public universities.
23. If this research activity and infrastructure was consolidated at designated centres of agricultural excellence in public universities, Australia might be expected to be able to add to its existing profile of internationally ranked universities. Indeed, reducing fragmentation would also contribute to a reduction in duplication of back-end administration and laboratory and related infrastructure.
24. Fragmentation also has negative flow on effects for the attractiveness of agricultural education. Capacity and reputation in research is an important factor in recruiting students to agricultural education programs and the overall reputation of a profession.
25. Integrating agricultural education, training and research is essential if agricultural professionals and farmers are to effectively utilise and adapt agricultural science and management techniques to contemporary problems and to embrace new agricultural technology into the future in a highly competitive environment.

What is CSU doing?

26. CSU's association with agriculture extends back to the 1890s with the establishment of the Bathurst Experimental Farm and Wagga Experimental Farm.





27. Building on this century old tradition, CSU is now one of the largest providers of agricultural education in Australia (approximately 10% of national enrolments and 25% of national distance education enrolments).
28. In horticulture and viticulture, CSU commands 19% of national enrolments and 64% of national distance education enrolments.
29. An analysis by the Western Research Institute shows that 88% of CSU's agricultural graduates from rural areas take up their first employment in the regions and over 40% of CSU's graduates from metropolitan areas also stay in country areas for employment in agriculture. This ensures that public investment in agricultural education is targeted to workforce needs in the rural agricultural production sector (Western Research Institute, 2006).
30. CSU offers an extensive range of programs designed to meet the current needs of the agricultural industries and environmental management and policy sectors:

Agriculture	Food Technology	Remote Sensing
Agricultural Biotechnology	Geographic Information	River Management
Agronomy	Systems (GIS)	Viticultural Management
Agribusiness	Horticultural Management	Viticultural Science
Animal Science	Irrigation	Water Management
Ecological Agriculture	Livestock Production and	Wine Business
Equine Management	Management	Wine Science
Equine Science	Natural Resource	Wine Growing
Environmental Horticulture	Management	
Environmental Management	Ornithology	

31. Recognising that agriculture is now a global business, future students need to be exposed to the latest scientific research and management techniques, including biosecurity, biotechnology, water management, natural resource management, veterinary science, agronomics, business planning, marketing and the application of technology to agricultural production. CSU is building its programs toward this future.
32. As a leader in both environmental and agricultural sciences, CSU is currently working on the establishment of an Environmental Agriculture Foundation to generate additional income support for research in this area.
33. To address the critical shortage of skilled veterinary scientists in inland Australia, and the increased bio-security risks to Australia's animal production, CSU has invested in the establishment of the only veterinary program in Australia to focus on production animals and herd management.
34. CSU has recently approved the establishment of an innovative new program in horticultural studies at its Orange Campus to focus on the potential growth of fresh produce exports to Asian markets.
35. To address the continuing issue of water management, irrigation and salinity, CSU is in the final stages of negotiating the establishment of the UNESCO International Centre of Water for Food Security at CSU that will complement our existing Institute for Land, Water and Society and our work in the CRC for Irrigation Futures, CRC for Future Farm Industries, CRC for Plant Bio-security and CRC for Cotton Catchment Communities.
36. To continue to enhance Australia's agricultural innovation and export, CSU has established the EH Graham Centre for Agricultural Innovation and National Wine and Grape Industry Centre and has established research links to the Paris-Grignon National Agronomics Institute, the International Rice Research Institute in the

Philippines and the Centre for the Application of Molecular Biology to International Agriculture.

37. To promote agricultural excellence internationally, CSU is engaged in agricultural teaching and research activities in China, Pakistan, India and Iran and is working in North Korea, China and Cambodia through the Australian Centre for International Agricultural Research to address agricultural production issues.
38. In July 2007, CSU announced that it will appoint a new research professor in extensions and will expand the availability of its agricultural programs at the Wagga Wagga and Orange campuses to increase local enrolments.



CSU's Agenda

39. Agriculture in general is confronting a range of opportunities and challenges that will impact on Australia's economic future and the sustainability of inland and rural communities.
40. CSU is of the view that consideration should be given by the Council of Australian Governments to a strategic review of agricultural education and research to examine:
 - (1) specific methods to increase enrolments in agricultural higher education;
 - (2) the most effective means to integrate research, education and extension programs in agricultural production regions;
 - (3) the appropriate distribution and number of agricultural education programs within States;
 - (4) the potential for co-location of agricultural research in inland and rural location as a means to enhance recruitment and retention of graduates in inland and rural locations;
 - (5) the consolidation of public investment in agricultural education and research in rural public universities as a means to reduce duplication, improve cost-effectiveness, enhance linkages between education, research and extension, build the international standards of agricultural education and research and expand the domestic and international market for Australian agricultural programs.
41. CSU believes it is well-positioned to support such an agenda, in particular because of its concentration on education and research programs in areas directly relevant to the agricultural zones in which it operates; its focus on applied education and research and industry collaboration; its ability to meet workforce needs through the retention of graduates in inland and rural employment, and; its capacity to link disciplines in agriculture, environment, management, information technology, spatial information, marketing, bio-security, plant and animal sciences.



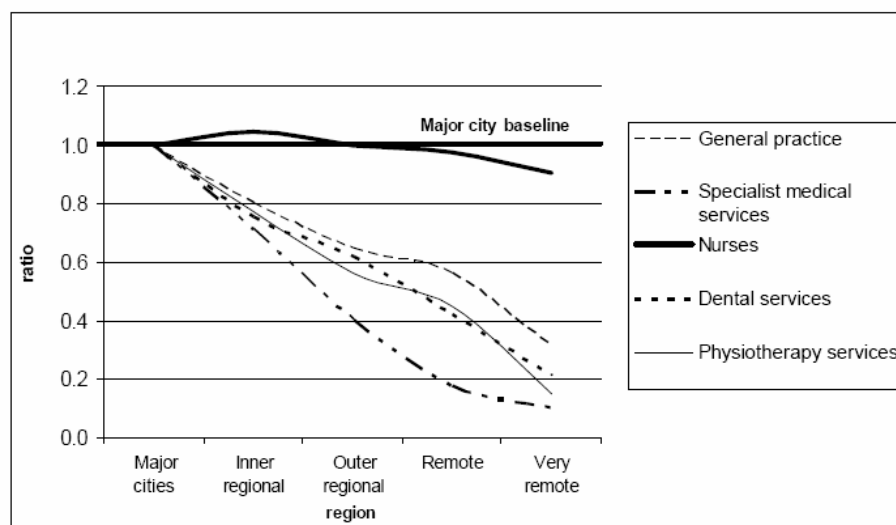
Growing Our Health Professions

Retaining health professionals in inland Australia

Background

1. People in rural areas of Australia have worse health than their metropolitan counterparts, including higher death rates and consequently lower life expectancy.
2. Poor access to health services is a major contributing factor to adverse health outcomes in inland Australia. This is caused by a mal-distribution of health professionals in inland and rural communities as shown in the Figure below (Productivity Commission, 2005b):

Figure 10.1 Practitioner to population ratios relative to major city levels



Data sources: AIHW (2003a; 2003b).

3. Flowing from this mal-distribution, and other relevant factors, the Australian Institute of Health and Welfare *Health Report 2006* found that there were 3,300 additional deaths annually in rural and remote communities above what would be expected for the same population groups in major cities (Australian Institute of Health and Welfare, 2006).
4. Implementing workable strategies to increase the number of health professionals practising in inland and rural locations, without oversupplying metropolitan centres, will be a critical priority for both the State and Commonwealth governments over the next two decades.



5. While there has been a strong commitment by government to address shortages in the supply of doctors, dentists, oral health therapists/hygienists and nurses in inland communities, Australia needs a comprehensive strategy to address mal-distribution across allied health occupations.
6. When demographic trends, the ageing of the rural health workforce, increased demand for health services and the incidence of ill health in inland and rural communities are taken into account, shortages arising from this mal-distribution in inland and rural communities will continue to grow across the allied health professions.
7. The provision of health education and training in inland and rural areas is critical to sustaining and growing our rural health workforce and has been proven to significantly increase the probability that graduates will remain to practise in inland and rural communities.
8. In a report by the Western Research Institute on graduate destinations, it was found that more than 70% of CSU's on-campus graduates from the health disciplines who were originally from regional areas, and over 20% of on-campus graduates from metropolitan areas, took up their first job in a regional area (Western Research Institute, 2006).
9. As previously noted, CSU introduced a pharmacy program specifically to address the low numbers of metropolitan graduates entering practice in rural locations. Since commencing its program, CSU has increased the number of pharmacists locating to rural practice from an average of 3 to 35 per annum.
10. The current evidence would appear to support the conclusion that it is necessary to educate health professionals in inland and rural Australia to address the mal-distribution and shortage of allied health professionals.
11. There is also support for the view that rurally based education and training may be more cost-effective.
12. After an extensive review of the Health Workforce by the Productivity Commission in 2005, it concluded that: "...provision of education and training in rural and remote areas may still be a more cost-effective way of improving access to health workers than, for example, seeking to entice less willing qualified practitioners away from the major population centres through the use of financial incentives ... [T]he Commission supports a strong focus on the provision of regionally-based health workforce education and training..." (Productivity Commission, 2005b)
13. Unfortunately, there has been no published study that shows that 'rural outreach programs' or other incentive schemes operated by metropolitan universities have been as effective as anticipated in influencing metropolitan graduates to locate to rural practice in any greater numbers than if these programs had not operated (that is, that more metropolitan health professionals relocate to rural practice than before the commencement of the programs).
14. In a preliminary survey by the Australian Medical Students Association, it was reported that 25% of medical students were considering buying their way out of their 6 years rural service obligation (Adelaide Advertiser, 2007).
15. While studies have shown that 'rural outreach programs' (such as short experience placements in rural health services) has a positive effect on student perceptions of



rural communities, there has been no definitive study to establish their effectiveness in actual retention of graduates in rural practice. In a 1999 study in Canada it was found that there was “no association between exposure to rural practice during undergraduate or residency training and choosing to practise in a rural community” (Easterbrook et al, 1999).

16. A literature review on primary medical training in rural areas citing McDonald et al noted that while “... rural background was clearly the primary predictor of entering rural practice .. the link between rural placements in training and later working in a rural practice is more tenuous, though there still appears to be an association” (Dunbabin et al, 2003).

What is CSU doing?

17. CSU is committed to growing and developing our professional health programs to address the effects of mal-distribution on the supply of health professionals to our inland and rural communities.
18. To meet the demand for health and allied health professionals in our inland communities, CSU offers the most comprehensive range of professionally accredited health and allied health programs of any University in Australia and New Zealand:

Dental Science (2009)	Mental Health	Oral Health Hygiene (2009)
Dietetics	Midwifery	Paramedic
Health Service Management	Nuclear Medicine	Pharmacy
Medical Imaging/Radiography	Nursing	Physiotherapy
Medical Science - Pathology	Nutrition and Dietetics	Podiatry
Medical Ultrasound	Occupational Therapy	Psychology
	Oral Health Therapy (2009)	Social Work
		Speech Pathology

19. Recognising its leadership in health education, CSU was ranked by the Commonwealth Government as being in the Top 10 universities in Australia for learning and teaching in health sciences in 2007.
20. This acknowledges CSU’s strong focus on education that prepares students for professional practice through a thorough grounding in clinical skills.
21. It also recognises CSU’s commitment to inter-professional learning. This is particularly critical in rural locations where the shortage of trained health professionals requires practitioners to have a broader understanding of health practice outside their traditional discipline. Inter-professional learning is one of the hallmarks of CSU’s approach to addressing the rural health workforce shortage.
22. CSU is developing its course profile in response to identified rural workforce shortages. In 2007, CSU was successful in obtaining funding for the construction and equipping of a new dental and oral health program to address the chronic shortage of dentists and oral health professionals across inland Australia.
23. CSU is also committed where possible to distributed and distance learning. Despite the significantly increased cost of delivering programs across multiple campus locations throughout inland NSW, CSU acknowledges the importance of providing students with local access to programs nearer to home both to recruit students and to encourage them to return to practice in their home locations. CSU is also a leader in distance education, providing opportunities for adult learners and students from remote locations, to access health education.



24. CSU is also committed to contributing to the supply of health services in our inland communities where possible. As previously discussed, CSU has established a range of primary health clinics in areas of critical shortage to provide health services to our inland communities and support clinical practice experience in these professions for our students.
25. CSU is also working with other inland health providers on practical prevention and early intervention strategies. For example, CSU works with the Greater Southern Area Health Service on an Asthma Alert system. The system allows people living with asthma to register on a web site to receive mobile phone updates on adverse environmental factors that may trigger asthma and thereby reduce adverse events and the presentation of patients to our hospital system.
26. CSU is committed to conducting research that is of direct relevance to addressing the causes of mortality and ill-health in inland communities. In 2007, CSU established a new Centre for Inland Health based in Wagga Wagga. The Centre for Inland Health co-ordinates cooperative research and development programs designed to examine and address the priority health issues and concerns of inland Australian communities. The programs are conducted cooperatively with external organisations, including health service providers. The Centre has developed key focus areas for research and development activities in the following areas:
- Mental health
 - Dentistry and Oral Health
 - Heart and lung health and fitness
 - Cancer
 - Muscle, bone and joint health
 - Vulnerable families
 - Ageing
 - Health services and workforce
 - Inland community capacity for health promotion
27. CSU has sought support from the Commonwealth Government for the establishment of a University Department of Rural Health (UDRH) at CSU in Wagga Wagga in response to the lack of coverage of this area by existing services. The UDRH program encourages students of medicine, nursing and other health professions to pursue a career in rural practice by providing opportunities for students to practise their clinical skills in a rural environment. It also supports health professionals currently practising in rural settings to improve retention. CSU believes its experience in rural health practice and networks with rural health service providers positions it uniquely to make a positive contribution under this program.

CSU's Agenda

28. CSU is of the view that there is clear evidence that educating students in inland areas significantly increases the probability of location to practise in inland and rural communities.
29. Given the evidence of the success of rurally located programs on the supply of health professionals to inland and rural communities, CSU is of the view that consideration should be given to the following:
- (1) provision of support for the development of regionally based integrated health workforce plans that link population trends, practitioner intention and demand and provide a robust framework for point in time planning and funding of health education programs in inland and rural universities;



- (2) that existing funding programs to encourage metropolitan graduates to locate to rural practice are reviewed to determine their cost-effectiveness and capacity to meet the long term needs of inland and rural communities;
- (3) the establishment of University Departments of Rural Health at rural based institutions in areas not presently covered by these departments to support clinical exposure and retention of clinical practitioners;
- (4) that funding for rural health education programs is directed to the development and expansion of health disciplines located in inland and rural institutions in identified areas of need.

Growing our Health Professions

Improving clinical skills education



Background

1. Clinical practice education provides students with real life experience in clinical decision-making. Unlike medical graduates, the majority of the health professionals are expected to be ready for professional clinical practice upon graduation.
2. In order to practice as a health professional, graduates need to be competent and confident in assessment, clinical decision-making, care planning and evaluation. This is critical to safe, quality patient care.
3. Intensive clinical practise experience is also a requirement for the registration of nursing and allied health clinicians in Australia. Exposure to clinical practice during undergraduate and postgraduate education ranges across the professions, with up to 1000 hours typically required for nursing and allied health professions.
4. Clinical practice education requirements are met in a range of different ways across the health disciplines. Some disciplines rely on clinical placements in both community and public and private hospitals (eg. nursing) while others are able to meet the requirement through placements in a range of specialised health services (eg. physiotherapy and podiatry). In pharmacy, graduates are required to undertake a one year internship in clinical practice as a requirement of the pharmacy boards.
5. Clinical practice education requires intensive supervision and lower staff-student ratios than traditional classroom programs. In nursing, for example, the ratio is 1:8 for clinical education.
6. Due to the shortage of health professionals to act as clinical supervisors, and the growing demand for clinical places to address these shortages, universities like CSU are finding it increasingly difficult to organise appropriate clinical placements for students.
7. In physiotherapy for example – an area that has been identified as a critical area of shortage in the rural health workforce – CSU has been forced to limit enrolments (despite strong demand) because of its inability to find appropriate clinical places for students. This will delay CSU delivering a solution to the rural workforce shortage in a period of rapidly increasing demand for physiotherapy services. This problem is particularly acute in inland and rural areas where workforce shortages are more critical across the health disciplines than metropolitan centres.
8. With increased demands placed on health services due to workforce shortages and restricted budgets, the level of support for clinical placement from the health system is declining. Supervision of students in a clinical environment is labour intensive and reduces the clinical productivity of supervisory staff.



9. Private and public health providers are increasingly charging universities and students to support clinical placements on a cost-recovery or commercial basis. Private provider participation in clinical education is limited due to the lack of access to health insurance rebates for services provided by students; lack of adequate or appropriate space for students to practise; lack of access to qualified supervising practitioners, and; lack of supporting infrastructure (accommodation, access to IT facilities etc) to accommodate students away from home.
10. To meet budget imperatives, there is also evidence of cost-shifting in relation to clinical placements. In a recent decision by the NSW Health Department, universities were advised that the Department would cease pre-screening of students for clinical experience in public hospitals (eg. working with children checks, criminal record checks, immunisation requirements) shifting the administrative cost to universities by requiring them to evaluate students against an expanded range of criteria.
11. Unlike medicine and nursing, there is no specific funding provided by the Government to support clinical placement experience or clinical simulation. The cost of clinical practice education for allied health students is largely borne by universities, students and the public health care sector with lesser input from private providers.
12. The cost of clinical practice education for universities is significant, including the cost of clinical coordinators to organise placements, academic supervision, travel to placement locations and accommodation, negotiation of contracts, insurance coverage and placement fees payable to some providers.
13. Nursing and allied health students are required to fund all or part of their attendance on clinical placement including travel, accommodation (often supplementary to maintaining accommodation near their University campus) and loss of income. This is estimated to cost each rural student an average of \$1500. These costs reflect the fact that rural and inland students typically have to live away from home, travel longer distances and face increasing accommodation and associated costs (eg. broadband or dial up connections) to access clinical placements.
14. Because the cost of clinical placements must be carried in whole or in part by students, there is a serious risk that escalating costs will deter students from enrolling in nursing and allied health programs as the cost of clinical participation continues to increase.
15. Up to 25% of agreed placements at CSU are cancelled (often at short notice) due to factors such as changes in staffing at the healthcare facility. This limits the University's capacity to make decisions about commencing student numbers at the beginning of the year.

University Based Primary Health Care Services

16. To meet the demand for additional clinical education places, many universities have established primary health care clinics as part of their professional preparation programs to provide clinical exposure for students.
17. In inland areas in particular, these clinics have the added advantage of providing reduced cost health services to inland communities in areas of critical shortage and have the capacity, utilising tele-health technology, to act as a base for extending services to more remote locations.
18. University operated primary health care clinics have high operating costs including the cost of clinical practitioners, construction of facilities, purchase of equipment and

consumables, indemnity insurance and compliance costs (eg. infection control, OH&S).

19. The lack of private health insurance coverage for clinical procedures performed under supervision by students, and the relative time taken for the completion of procedures by less experienced student practitioners, limits the market for these services but provides an essential bridge between public and private health services for rural communities.
20. Until recently, there has also been little support for the establishment of university-operated primary health care clinics as an alternative to reliance on private or public providers for clinical practice education.

Inter-Professional Clinical Simulation Laboratories

21. The use of clinical simulators to complement clinical practice education has been growing over the last decade. Clinical simulation education is now an established tool in preparing students for clinical practice and is commonly used in hospitals and other health services for continuing professional development.
22. In Australia, facilities tend to be clustered in major capital cities, are specific to particular clinical disciplines, small in scale and of varying standards.
23. Clinical simulation has a range of advantages over real life clinical practice education:
 - (a) the use of simulators allows students to obtain high levels of competency in health assessment, critical thinking and decision making and the performance and evaluation of clinical procedures and treatment in a safe environment before they practise on real patients, providing improved quality patient care;
 - (b) procedures can be performed repeatedly under specialist supervision increasing competency and confidence of student practitioners;
 - (c) training involves direct participation by students in patient interactions, health assessment and performance of clinical procedures, rather than simply the observation of procedures performed by an experienced clinician;
 - (d) students are practice ready when they undertake clinical practice in a real life environment, enabling clinical supervision to be more effectively deployed; and
 - (e) practice is not dependent on waiting for patients to present with the requisite conditions.
24. Clinical simulation has a strong application in ongoing medical, nursing and allied health extension and professional development.
25. Clinical simulation involves a range of activities, technologies and equipment including:
 - (a) Standardised Patient Programs (SPP) which involves people from a variety of backgrounds including education, health, visual and performing arts who have been carefully coached to simulate an actual patient so accurately that the simulation cannot be detected by a skilled clinician. In performing the simulation, the Standardised Patient presents the gestalt of the patient being simulated; not just the history, but the body language, the physical findings, and the emotional and personality characteristics as well. Standardised Patients are 'value added' to education in many ways, especially in their





ability to give feedback from a patient's unique point of view. Communication and interpersonal skills are emphasised to enhance the therapeutic quality of the professional/patient relationship. The enhanced professional/patient relationship results in greater patient satisfaction and promotes better health outcomes;

- (b) simple manikins and anatomical models used to facilitate acquisition of basic skills;
 - (c) computer based simulators which provide training and assessment in clinical knowledge and decision-making such as diagnostics based on pre-determined case studies;
 - (d) procedural simulators which provide practice in straightforward procedures;
 - (e) patient simulators which are anatomically correct computer-run manikins designed to exhibit signs and symptoms of injury or illness and respond to treatments just as a human would (reproducing a range of responses such as cardiovascular, respiratory, neurological and gastrological as well as speech);
 - (f) tele-health facilities that build student understanding of using technology in remote practice and allow students to be monitored remotely in clinical environments;
 - (g) complete facilities simulation which replicates health care environments such as hospital wards, intensive care wards, operating theatres or emergency departments and deploys a range of aides listed above.
26. University based inter-professional clinical simulation centres are being established in Europe and North America, comprising mock general wards, operating theatres, intensive care units, general practice surgeries, emergency departments, hospital and community pharmacy as well as state-of-the-art audio-visual equipment, video-conferencing and high tech simulated patients, providing students with a complete clinical practice experience.
27. The focus on training in multiple competencies, rather than specialisations, promotes inter-professional learning and engagement. This is particularly critical in rural locations where the shortage of health professionals requires practitioners to have a broader understanding of health practice outside their traditional discipline boundaries. Inter-professional teaching and learning is a hallmark of CSU's approach to addressing the rural health workforce shortage.
28. Like other States, however, clinical simulation training facilities in New South Wales tend to be specialised and are concentrated in Sydney despite the significant number of practitioners working, and undergraduate and postgraduate health students training, in inland and rural areas.

What is CSU doing?

29. CSU has a particular focus on professional education and the preparation of employment ready graduates across all its programs. Clinical practice education is accordingly central to CSU's teaching/learning philosophy.
30. CSU is seeking to address the crisis in clinical placement opportunities in inland Australia in a number of ways.



31. In 2007, CSU established the Education for Practice Institute and has appointed a Professor to provide leadership to the Centre. The Centre will support the establishment of successful collaboration within and between disciplines, professions, industry, government and other educational institutions to promote and enhance professional and practice-based education. The Centre will also support the development of policy, infrastructure and resources for the administration of professional and practicum-based education and the enhancement of work-place learning.
32. CSU has developed a range of standard agreements to simplify the placement of students in clinical environments, including obtaining appropriate insurance to ensure students and providers are adequately covered.
33. CSU has established small specialised clinical simulation laboratories across its campuses to provide students with access to realistic environments in which to practise and be assessed on their clinical skills.
34. CSU plans, subject to funding, to construct an inter-disciplinary Crisis Simulation Unit allied to CSU's emergency medicine and paramedical programs in Bathurst. This will provide a simulated inter-professional environment for health, policing and emergency management students to practise their skills in dealing with large scale emergencies such as natural disasters, terrorist attack or other critical events.
35. CSU has established a Podiatry Clinic and a Diabetic and Cardiovascular Screening clinic in Albury-Wodonga (cardiovascular disease and diabetes are two of the leading causes of death in inland Australia) and a Functional Rehabilitation Clinic in Bathurst.
36. In an Australian first, CSU has been granted funding from the Commonwealth Government to construct and equip 5 Dental Education Clinics across inland NSW to meet the clinical experience requirements of students enrolled in its new dental science and oral health programs. These clinics will not only provide students with a high quality clinical practice environment they will also provide for members of our communities unable to access public services or afford private services.
37. CSU has allocated \$160,000 to researchers in the Centre for Inland Health to evaluate and make recommendations on the most appropriate business model for the effective delivery of University primary health care services that are financially self-sufficient and academically appropriate to provide a model for the provision of clinical practice education and address the provision of health services in areas of critical shortage.
38. CSU is also investing in programs that provide clinical practice opportunities that extend the reach of community health services beyond CSU's campus footprint. For example, in cooperation with the Coinda Family Support Service all 3rd year CSU speech pathology students are teamed with families who have at least one child with communication problems. Over a year, students work with the child, their family and teachers to provide a full assessment and intervention service. As a result, up to 20 families with a child with a disability can receive speech therapy services every year providing clinical practice opportunities for students, and delivering essential health services to children with disabilities and their families in inland NSW.



CSU's Agenda

39. Inland Australia needs a sustainable framework to ensure the continuous supply of nursing and allied health professionals to meet the needs of an ageing population and to provide more cost effective care options into the future.
40. Chronic workforce shortages in the rural health sector are well researched and documented and create specific difficulties for CSU to ensure students can undertake appropriate clinical practice.
41. While increased funding to universities for clinical placements may be part of the solution, there is concern that additional funding may create a commercial market for clinical practice supervision escalating costs over time without increasing the number of available places. As most allied health professions are experiencing a workforce shortage, it is also unclear how increased funding will address the problem of insufficient clinical supervisors for the number of student places required.
42. CSU believes that there are other options for addressing the crisis in rural clinical practice that might be considered.
43. With a significant number of health students educated outside metropolitan areas, CSU is of the view that consideration might be given to the construction of a state-of-the-art Centre for Inter-professional Clinical Simulation Training in inland Australia. Such a Centre would not only help to prepare students for professional practice but would also support continuing professional education and development and inter-professional learning for existing practitioners. This might also help to address the common concern of rural practitioners about lack of access to training and development opportunities.
44. By establishing a Centre that is based on inter-professional practice, students and practitioners would extend their knowledge and referral capacity, leading to effective prevention and early intervention and sustaining health services over time.
45. The establishment of such a Centre would require changes to accreditation practices and the recognition of formal competencies obtained through clinical simulation. It would also require the support of area health services in rural areas.
46. The recurrent cost of operating the Centre might be met through the provision of continuing professional development courses for health professionals in both rural and metropolitan centres on a fee for service basis.
47. CSU is also of the view that the Government should give consideration to the following:
 - (1) examine funding models for the expansion of University operated primary health care clinics in inland and rural locations to perform the dual role of increasing public health services in critical areas of shortage and expanding clinical placement opportunities;
 - (2) examine the options for extending Medicare, or providing fee for service payments, for the full range of primary health care services offered by existing and future University health clinics in inland and rural areas (eg. dentistry, physiotherapy, podiatry, speech pathology). Such a program would expand existing public rural health services, utilise existing capacity within universities, provide incentives for rural universities to develop health services associated with

academic programs and provide a reduced cost service to inland and rural communities under the Medicare Benefits Scheme or special service program;

- (3) explore with the health insurance industry options for extending insurance rebates to clinical services provided by students under supervision on a lower cost per service basis;
- (4) examine options for extending University primary health care services and clinical education to outer regional and remote communities through the expansion of tele-health care facilities (eg. University based and mobile video conferencing facilities that allow students to travel to remote communities for clinical experience or to conduct diagnostic training using technology). This might also include support for the establishment of mobile clinical education units that can transport students, supervisors and equipment to remote communities to deliver health services and provide students with clinical experience;
- (5) review the funding cluster for nursing and allied health to ensure that it appropriately reflects the true cost of pre-clinical and clinical education; and
- (6) examine the establishment of a Rural Clinical Placement Support Fund to provide direct out-of-pocket financial support to rural students to attend clinical practice programs.





Growing our Opportunities

Improving Access and Reducing Attrition for Inland Students

Background

1. On-campus University supported student accommodation is important for four reasons:
 - (a) being able to live on-campus is now a deciding factor for many parents and students in their choice of University;
 - (b) many CSU students come from rural and remote communities and do not have the option of living at home during their studies – paying normal residential rents during their study increases the financial burden for students and parents and contributes to increased attrition among these students;
 - (c) students who live in on-campus University supported accommodation are more than 50% less likely to drop out of University study;
 - (d) on-campus University supported accommodation attracts more students to regional centres contributing to gross regional product and the diversity of our communities.
2. CSU currently has around 2100 on-campus University supported beds for students across its campuses – less than 40% of student demand. Due to the age of CSU's student accommodation, 25% of our current beds (around 500 beds) will be closed within the next 5 years as they will no longer be serviceable.

3. Based on projected student demand, CSU has a current shortfall of 3900 beds to accommodate demand for on-campus University supported accommodation from non-local students distributed as follows:

CAMPUS	SHORTFALL
Albury-Wodonga	860
Bathurst	1580
Dubbo	-
Orange	-
Wagga Wagga	1460

4. The provision of guaranteed on-campus accommodation has become a tool for some universities to attract students. Universities such as ANU now guarantee every first year student University accommodation to attract additional students. This places pressure on CSU to match these incentives.
5. Attracting and retaining non-local students is critical to the economic sustainability and development of CSU's campus towns. A study by the Western Research Institute found that CSU (including non-local and international students) generates

around \$250 million in gross regional product through expenditure in our communities and 12% of the employment in Bathurst and 9% in Wagga Wagga.

6. Students who live on-campus during their study are more likely to complete their course successfully than students who do not. In 2005, students who were living in on-campus University supported accommodation were less likely to drop out of their studies than students who lived off-campus (around 3% compared to 15%).
7. Demand for on-campus University supported accommodation is growing, particularly in CSU's high intensity professional programs such as pharmacy and veterinary science.
8. CSU offers accommodation packages with occupancy arrangements aligned to teaching programs. Students who are forced into the commercial rental market are required to commit to full year rental contracts. The CSU arrangement allows students to maintain links, particularly for regional seasonal employment, with their home community by returning to their home location during University vacations. This is particularly important for farm families that rely on students for labour during breaks.
9. Metropolitan universities have an advantage over institutions such as CSU because of their access to high value land, good rental returns and large cash reserves built on historic funding of universities by government which can be used to underwrite accommodation and other developments. Other universities, due to their position in high value property markets, are able to leverage their location to enter into private development partnerships to provide mixed accommodation and commercial developments. Newer regional universities like CSU suffer from a competitive disadvantage in access to funds to pay for the construction of University supported student accommodation.
10. Attracting and retaining rural students in inland and rural NSW is essential to the sustainability of regional communities and ensuring the flow of highly trained professionals back into rural economies and businesses.



What CSU is doing?

6. CSU is applying surpluses generated from returns on existing student catering and residential service operations to construct 40 additional bedrooms each year for the next five years.
7. CSU agriculture alumni have also financially contributed to the construction of 5 new bedrooms over the last 4 years to the Wagga Wagga campus to help rural and remote students to have the chance of a university education through the provision of supported accommodation.
8. CSU is examining options for financing the construction of 600 new bedrooms across its Albury-Wodonga, Bathurst and Wagga Wagga campuses at a cost of \$35 million.
9. This will not only reduce resources available for teaching and research, but will only replace aged stock that is due to be decommissioned rather than address the demand for University supported on-campus accommodation for rural, regional and non-local students.



CSU's Agenda

10. CSU is of the view that consideration should be given to the establishment of a special funding program to support the construction of University supported on-campus student accommodation at rurally based universities to expand the availability of low cost accommodation to non-local students to meet identified demand.
11. Such a program would assist to:
 - (1) ensure parents and students can make fair academic choices about where they want to study without lack of access to accommodation being a deciding factor;
 - (2) ensure fairness to students and families from rural and remote areas by providing access to cheaper on-campus University supported accommodation;
 - (3) improve retention and completion rates (and therefore reduce wasted investment in uncompleted studies) and reduce drop-out rates;
 - (4) contribute to the gross regional product of regional communities.



References

- Adelaide Advertiser (2007), *New doctors' bush buy-out*, (Sue Dunlevy, 7 March 2007)
- Agribusiness Australia Association (2007), *Agribusiness in Australia*, downloaded from http://www.agribusiness.asn.au/index.php?h=biotechnology&content=biotechnology_biot echresources.php# on 20 August 2007
- Agriculture and Food Policy Reference Group (2006) *Creating Our Future: Agriculture and Food Policy for the Next Generation*, Report to the Minister for Agriculture, Fisheries and Forestry, Canberra, February.
- Australian Farm Institute (2005) *Australia's Farm Dependent Economy*
- Australian Farm Institute (2007) *Productivity Growth in Australian Agriculture: Trends*
- Australian Institute of Health and Welfare (2006), *Australia's Health 2006*, Canberra
- Commonwealth Government (2006), *Skills: Rural Australia's Need - Inquiry into Rural Skills Training and Research*, Commonwealth House of Representatives Standing Committee on Agriculture, Fisheries and Forestry, Canberra
- Dunbabin JS, Levitt L, (2003), *Rural origin and rural medical exposure: their impact on the rural and remote medical workforce in Australia*, (2003) *Rural and Remote Health* 3 (online), 2003: 212 available from: <http://www.rrh.org.au> citing McDonald J, Bibby L Carroll S (2002) *Recruiting and retaining general practitioners in rural areas: improving outcomes through evidence-based research and community capacity-building. Evidence-based review: Final Report*. Ballarat, VIC: Centre for Health Research and Practice, University of Ballarat, 2002.
- Easterbrook, M, Godwin, M, Wilson, R, Hodgetts, G, Brown, G, Pong, R and Najgebauer, E (1999), *Rural background and clinical rural rotations during medical training: effect on practice location* (1999) *Canadian Medical Association Journal*, Vol 160, Issue 8 1159-1163
- NSW Parliament (2006), *Inquiry Into Skills Shortages In Rural And Regional NSW*, NSW Legislative Council Standing Committee on State Development, Sydney
- Productivity Commission (2005a), *Trends in Australian Agriculture*, Research report, Canberra
- Productivity Commission (2005b), *Australia's Health Workforce*, Research Report, Canberra.
- Western Research Institute (2005), *Economic Impact of Charles Sturt University*, Bathurst
- Western Research Institute (2006), *The Destination of On-Campus Charles Sturt University Graduates*, Bathurst
- Western Research Institute (2007), *Economic Impact of Charles Sturt University Dental and Oral Health Program*, Bathurst
- World Health Organization (2007), *Global and regional food consumption patterns and trends*, downloaded from http://www.who.int/nutrition/topics/3_foodconsumption/en/print.html on 13 August 2007.