



Future Directions

USQ Surat Basin and South-West Queensland

December 2010



USQ Surat Basin Engagement Future Directions

1. What are we trying to achieve?

The development of the energy industry in the Surat Basin and south-west Queensland region provides USQ with new opportunities in teaching, research and engagement – with the potential to provide significant research funds for USQ and to fuel new program developments to meet community and industry needs. The population growth of the region also has the potential to expand our student market. Some of the new programs may be in energy and construction related disciplines but the regional population growth will also produce an increase in demand for professionals across the broader social and community support, education, engineering, regional planning, resource management and allied health areas.

This strategy document identifies opportunities to grow the educational, research and community footprint of USQ within the Surat Basin and South-west Queensland region. It has a focus on the next 5-10 year period but is cognisant of the 30-40 year time horizon for the coal seam gas developments in the region.

Positioning USQ for the future

USQ is well positioned to provide a flexible education and research platform for ongoing investment and development of the skills, technology and infrastructure required for sustainable communities and regional development in existing and new industries. USQ will achieve this by providing quality professional education opportunities tailored to the needs of the region's development, investing in research focussed on solving regional challenges, and building value adding partnerships with communities, business and government.

USQ is committed to working with all the major stakeholders in the region and recognises that as the local university, it has a particular leadership and extension role to play in assisting community information, engagement and empowerment in resolving the complexities of sustainable regional development.

USQ is also committed to maintaining the highest standards of research integrity and abides by the *Australian Code for the Responsible Conduct of Research*. USQ's research culture aims to demonstrate: honesty and integrity; respect for human research participants, animals and the environment; good stewardship of the public resources used to conduct research; appropriate acknowledgement of the role of others in research; and responsible communication of research results. As the local University, USQ seeks to (a) build local capacity and become a knowledge repository for the region, (b) conduct high quality, independent research, and (c) to provide sound advice in order to inform all stakeholders and to help build healthy and sustainable communities within the Surat Basin and south-western Queensland region.

By engaging in the development of the Surat Basin and south-west Queensland energy resources, USQ aims to extend its position as the region's leading provider of tertiary educational products and research services. USQ also aims to play a role that is valued and

relevant to achieving a sustainable future for the region. Hence, the key objective of this strategy is to ensure USQ positions itself as:

- *the major provider of higher education services to the Surat Basin and south-west Queensland region and industries;*
- *the preferred researcher provider across a broad spectrum of existing and emerging niche areas; and*
- *a regional leader contributing to vibrant and sustainable regional communities through cultural, educational and community services.*

2. Setting the Scene

The key drivers for change within the Surat Basin and south-west Queensland area over the next 30-40 years include:

- Energy and mining province developments – population dynamics, social impacts, infrastructure requirements, operation and maintenance, environmental impacts;
- Agricultural challenges including reduced water availability due to Murray-Darling Basin initiatives, impact of climate change, competition for land and labour; and
- Renewable and alternative energy (especially solar, geothermal) development opportunities.

The development pressures associated with CSG and mining changes can be separated into the immediate construction and development phase (2011-2020) which will require a significant workforce transitioning into a longer term operational phase requiring a smaller number of workers within the region. These activities will place significant pressures on regional capacity, community networks and regional infrastructure.

The Queensland Government is developing a Surat Basin Future Directions Statement to work with community and industry to achieve a long term prosperous and sustainable future for the Surat Basin region. They are identifying issues in a range of areas that will require coordinated action through improved planning and policies, and new programs and services on the ground. The Government's Future Directions Statement is identifying the major infrastructure project investment support needed to resource development and distribution in the Surat Basin region. Whilst this USQ Future Directions Statement focuses on the Surat Basin, it will integrate with relevant Queensland and Federal Government initiatives for rural and regional areas.

3. Engaging the Community and Industry

As the region's leading educational institution USQ can best articulate a range of services relevant to the needs of the community by engaging with stakeholders at the sector, community and enterprise levels via partnerships. A constructive value-adding approach requires understanding, detailed knowledge, personal networks, and on-ground experience if the most appropriate research solutions and educational products and services are to be

delivered. To achieve effective outcomes, USQ will seek to engage with all stakeholders including:

- Community,
- Industry,
- Indigenous, farming and environmental stakeholders,
- Government (Local/State and Federal),
- Government agencies, and
- Other educational providers.

4. Key Educational Opportunities

USQ is a leading provider of higher education services to the Surat Basin and south-west Queensland region with many students studying by distance mode. However, the changing workforce and community requirements associated with the regional development provides the opportunity to re-assess both the breadth and depth of the University's program offerings as well as its marketing and delivery mechanisms. Actions already undertaken to address changing regional demands include the introduction from 2011 of new Associate Degree and Bachelor level programs in construction.

Recommendation 1 – Where there is demand, continue to develop new programs in key technical disciplines (e.g. process engineering, oil and gas engineering, water resource engineering, quantity surveying, resource management and regional and town planning) to meet changing industry and regional skills needs.

Recommendation 2 – Continue to develop closer linkages with TAFE Qld for (a) targeted development of improved articulation pathways between existing and new programs, (b) development of new flexible pathway programs involving alternative delivery models and/or concurrent enrolment options and (c) the provision of regional learning centres.

Recommendation 3 – Enhance the development and delivery of professional development short courses in targeted areas including business development and management, construction management, instrumentation and control, power systems, spatial data management, irrigation and environmental management.

Recommendation 4 – Seek financial and operational support from industry and government to (a) enable increased professional practice opportunities in regional areas for nursing, early childhood and education students and (b) encourage indigenous and low socio-economic students from the region to participate in higher education opportunities.

Recommendation 5 – Develop (a) expanded program offerings in regional health and allied health issues, and (b) explore the feasibility of establishing an Advanced Medical School focused on the provision of postgraduate and professional education programs for regional areas.

Recommendation 6 - Enhance engagement and support for regional schools including (a) sustained professional development for primary and secondary teachers across the science, technology, engineering and maths areas, (b) explore opportunities to integrate foundation tertiary materials relevant to career pathways into year 11 and 12 curricula, (c) greater promotion of the Headstart program into regional schools, and (d) continue to support creative arts extension into schools.

Recommendation 7 - Develop a process to continually engage with, and seek co-investment from industry and regional communities to ensure that program offerings are developed in partnership and reflect current needs and demand.

5. Key Research Opportunities

USQ has a goal to be an acknowledged leader in applied research and research training, with a particular emphasis on research in sustainable futures. The University is well positioned to play a key role in providing independent research into contentious issues of regional significance and to act as the knowledge repository for this work.

USQ has well regarded research capability in agricultural engineering, rural health, biological systems, and climate variability. However, much of the University research capability is either not visible or difficult to access by external stakeholders. University administrative processes and lack of academic staff expertise in negotiating with industry, also make it difficult for industry to engage USQ research capability in a timely and effective manner. In particular, the University lacks a dedicated capability to engage effectively with industry and community regarding the development of research opportunities. The Office of External Relations currently identifies collaborative and contract research opportunities via industry networks. However, this engagement 'portal' is not adequately resourced to perform this function on behalf of the total USQ research community. Where appropriate, this capacity should be developed within research centres.

To position the University to address regional challenges there is a need to further develop existing areas of research strength and to support the development of new areas where there is a natural alignment between the University strategic direction and regional needs. However, the University will need to seek partnerships and co-funding to focus its limited resources on concentrations of research excellence. Areas of existing and potential research concentration are outlined in Table 1.

The University is keen to develop additional research capability but it is beyond the capacity of the University to resource significant research investment on its own. In some cases, it will be appropriate to partner with government, industry and other universities to develop the necessary research critical mass and access appropriate infrastructure. Hence, there will be a need to further develop appropriate funding models and researcher partnerships.

Recommendation 8 – Create a new Sustainable Regions Institute to provide a critical mass and visible focus for community and industry engagement around regional development issues. This Institute will be an umbrella structure grouping the

existing NCEA, ACSC and ASCBD centres (which would continue to exist). The Institute should be resourced with a research focused business development capability.

Recommendation 9 – Initiate a process to confirm research concentrations and to develop and promote capacity in concentration areas.

Table 1. Areas of Research Concentration

Regional Communities	Regional economic development – local and regional data acquisition, regional modelling Social impacts of rapid regional development, alternative labour sources, housing and infrastructure requirements Planning, construction, maintenance and rehabilitation of regional infrastructure Indigenous and cultural heritage Racial awareness and inter-cultural harmony
Health Services	Improving delivery of regional GP, nursing, mental and allied health services Bio-medical science, health informatics, infectious diseases, and engineering technologies
CSG Infrastructure and Processes	Process Engineering for CSG and associated industries – instrumentation and control, handling thermofluids, numerical modelling, mechanical and mechatronic engineering Reservoir Engineering – reservoir modelling Fibre Composite Engineering – pipelines and structures
Renewable & Alternative Energy	Solar, geothermal, biofuels, coal seam gas, coal to liquids
Sustainable Landscapes	Water in the landscape– Irrigation engineering, catchment hydrology, landscape salinity, groundwater and hydrogeology Spatial Sciences – Data management and integration, infrastructure and planning, knowledge management Climate change adaptation – prediction, risks, carbon balances Ecosystems – biodiversity, habitat management, ecological-vegetation fragmentation
Future Agricultural Production	Agricultural Engineering - precision agriculture, farming systems, automated control systems, strategic cropping land, carbon sequestration, irrigation engineering Strategic cropping land - soil health, disturbed land rehabilitation Crop Production – crop improvement, genetics, diseases, cropping options
Educating at a Distance	Pedagogy and technology for improving regional education

Recommendation 10 – Establish a regional groundwater research capability to provide independent research and advice in relation to groundwater impacts and management options associated with coal seam gas extraction, mining and irrigated agriculture activities. This group should be based within the proposed Sustainable Regions Institute.

Recommendation 11 – In partnership with industry and community continue to build capacity in key research concentrations with a particular focus on (a) CSG infrastructure and process engineering, (b) social, environmental and economic impacts of regional development, (c) regional health services, and (d) social, environmental and cultural heritage responsibility in mining.

Recommendation 12 – Improve internal USQ administrative, legal and financial processes to reduce impediments to the ability of the University to react quickly and effectively to capture and deliver research opportunities.

Recommendation 13 – Develop a process to continually engage with, and seek co-investment from industry and regional communities to ensure that research opportunities, directions, and capacity are developed in partnership and reflect current needs and demand.

6. Key Community Support Opportunities

USQ has a strong community focus and seeks to exchange skills and knowledge through the sharing of programs, resources and research for the benefit of the whole community. The University's educational and research activities provide direct benefits to the local and regional community. However, as a regional University, it also plays an important cultural and social role within the local area. In particular, the University has a long history of involvement in the development of regional culture through the work of the School of Creative Arts, Artsworx, McGregor Schools and the Centre for Australian Indigenous Knowledges.

Recommendation 14 - Continue engagement in the regional commerce and industry bodies to provide leadership and seek opportunities for USQ contributions.

Recommendation 15 – Explore the provision of regional development, community and indigenous services in partnership with regional communities and Government where aligned with University educational and research activities.

Recommendation 16 – Explore opportunities and seek co-investment to enhance provision of USQ cultural and community activities within the Surat Basin and south-west Queensland region.

Recommendation 17 – Continue to develop USQ as a source of expertise able to provide assistance and extension services to the community in a wide range of fields.