

## Director's Welcome

Welcome to the First IRIS Newsletter !

While some Research Centres have their own newsletters, the purpose of this one is to improve communication and collaboration across the different Centres and Groups that form the Institute, and to increase the involvement of researchers and academics in IRIS research programs.

The development and management of large-scale multidisciplinary long-term research programs that deliver tangible benefits from research to industries and communities of CQ is an important IRIS objective. These programs will enhance research opportunities for IRIS members and allow them to participate in research projects that address real life needs. The target is to initiate at least one large-scale research program per year, in addition to developing a number of smaller programs and projects.

The CQ Energy Workshop, held by IRIS in 2010, was a good introduction to the challenges being faced by power stations and energy distributors. As an outcome of the workshop, CQUni was invited to collaborate on an application for a Power Cooperative Research Centre (CRC) lead by the Australian Power Institute. It is expected that the proposed venture between industry and academia will deliver \$1-1.5 million per annum in research income to the University, plus opportunities for establishing vital links with more than 30 organisations working in the industry. An important task for IRIS is to ensure that opportunities from this venture are fully exploited by researchers. To date, the Power Engineering Group and the Economics Group from the Centre for Environmental Management have been contributing to the development of the CRC research program. However, in the long term there will be opportunities for research in other areas such as asset management and monitoring, material science, and ICT. This first issue of the newsletter will introduce you to other programs and projects being developed by IRIS, and advise how to become involved.

In addition to the development of new programs, IRIS is looking to focus on helping new academics and early career researchers with establishing internal and external links, submission of grants and commencement of research projects. As part of this process, each issue of the Newsletter will provide an introduction to new staff members of IRIS. This issue welcomes Professor Marnie Campbell and Mr Ted Gardner who joined earlier this year.

I would like to thank the IRIS Management Team and, in particular, Dr Christelle Catuogno for their assistance with producing the first issue of the Newsletter. We would like all IRIS researchers and students to have 'ownership' of the Newsletter. Please share with us your thoughts on the content and suggest improvements. I commend this letter to you and hope you will enjoy the reading.

Dr Anna Thomas, IRIS Director.



## Issue 1, July 2011

### Content

<b>Welcome</b>	<b>1</b>
<b>Newsletter's Highlights</b>	<b>2</b>
<b>Working Together Towards</b>	
<b>Innovation</b>	<b>3</b>
<b>Opportunities for Research</b>	<b>4</b>
<b>Researcher Profiles</b>	<b>5</b>
<b>IRIS Research Makes the News</b>	<b>6</b>
<b>News in Focus</b>	<b>7</b>
<b>Introducing the IRIS Management Team</b>	<b>8</b>



To stay up to date on all our activities subscribe to our mailing list by emailing Mrs Karen Chapman at [iris@cqu.edu.au](mailto:iris@cqu.edu.au).

Visit our web site for more information on our activities:  
[www.iris.cqu.edu.au](http://www.iris.cqu.edu.au)

# Newsletter's Highlights

## Focus on Cleantech

The Queensland Government Cleantech Development Strategy 2011-2015 was announced earlier this year. From an IRIS point of view, this Strategy is capable of facilitating regional development, growth of new knowledge-based industries in the region and the market for Cleantech (or clean technology) R&D.

IRIS involvement in the development of submissions to the Government started in April 2010 when the State Government, through Department of Employment, Economic Development and Innovation (DEEDI), initiated its consultation on the Cleantech Industry Development Strategy. In the Central Queensland (CQ) region, information was provided by an Issues Paper to selected parties, with a consultation session held in Rockhampton. This session was attended by staff from various local offices of State Government, CQUniversity Australia researchers, Rockhampton Regional Council and small business owners. During that session, the group recognised that Central Queensland was a region uniquely placed to develop (or, more correctly, to continue to develop) a vibrant Cleantech industry.

IRIS researcher, Dr Susan Kinnear, leader of the Regional Sustainable Development program, coordinated the discussion group and a response document from the CQ region was submitted to the Queensland Government in May 2010.

Cleantech is a relatively new industry driven by productivity which aims to address ecological problems using natural emerging technologies. According to the definition in the Government Cleantech Strategy document, 'Cleantech represents a diverse range of innovative technologies, products, and services and processes that measure, avoid, reduce or remediate negative environmental impact'. The Queensland strategy focuses on the development of two new emerging industries in the state: clean energy and bio-based industrial products. In particular, sectors of clean energy, environmental services, green building and materials, resource recovery and recycling, sustainable transport and water and wastewater management have been identified for development, and there is a good alignment between these areas and IRIS research directions.

Many research projects currently undertaken by IRIS researchers in areas such as industrial water treatment, environment protection, energy efficiency, bio-fuels, clean coal and mine remediation may indeed lead to the development of new clean products and technologies. Practical focus and the value of IRIS research in the areas of bio-char, bio-fuels from native plants, water treatment and energy efficiency impressed Mr Choi and Mr Nielsen, who visited the University last year. Since that time, many new staff with expertise in Cleantech have joined the University and IRIS, thus extending the Institute's capabilities for new research in the area of Cleantech.

Looking to create new opportunities for researchers, IRIS is currently finalising a proposal to DEEDI for a Central Queensland Cleantech Partnering Program. The proposed Program, if supported by the Government, will form part of the Queensland Cleantech Strategy for growth of new industries in the region. Importantly, it will also increase demand for new research.



**In the next issue of the Newsletter, IRIS will report on outcomes of discussions to be held with DEEDI over the next couple of months.**

IRIS Meets Mr Choi MP (QLD parliamentary secretary - Trade and Multicultural Affairs), and Mr Nielsen (Queensland Office of Clean Energy). Mr Choi and Mr Nielsen were very impressed with the practical focus and the value of IRIS' Cleantech projects.

# Working Together Towards Innovation

## Regional Development Initiatives

### Central Queensland Centre for Innovative Regional Development

Dr Kinnear is working with the Department of Innovation Industry, Science and Research (DIISR) to design an Innovation Prospectus. In 2010, over 100 regional leaders and organisations signed the ‘CQ Innovation Accord’ – a symbolic document committing them to use and promote innovation in CQ regional development.

The prospectus, currently in preparation, aims to inform stakeholders and present relevant data and statistics on the CQ region. It will ultimately be the instrument by which CQ will develop methods and practices for innovation. A community of practice was created using [LinkedIn](#) to encourage discussion. Join the “CQ Innovation & Regional Development Community of Practice” group to voice your opinion. For more information on the prospectus or how to become a signatory to the CQ innovation Accord, contact Dr Susan Kinnear at [s.kinnear@cqu.edu.au](mailto:s.kinnear@cqu.edu.au) or 4930 9336.



Being an expert in collaboration and partnering, IRIS will ensure that the best team is working on your solution bringing together experts and intellectual property from relevant Australian and international Universities and business organisations.

## International Collaborations

### Australia-India Fund in Sustainable Housing

The ‘Grand Challenge Fund’ was introduced in November 2010 by the Australian and Indian governments to support ambitious, large-scale research projects that deliver practical solutions to some of the major challenges shared by both countries. Out of a total of 73 applications received, an expression of interest submitted collaboratively with QUT and IRIS (along with 11 others) has been selected for submission as a full application.

A full proposal on “Integrating Water Security and Sanitation in sustainable housing using an urban metabolism framework” will be submitted to DIISR on 6 June. The project has now expanded to three themes (Water/sanitation/ urban agriculture, Housing, Community) with the water/sanitation/agriculture lead by CQUni. The support from India (both research institute and GoI) has been excellent, and included a recent visit to Australia by CBRI (Central Building Research Institute) scientists. We expect to build and monitor a model apartment building in India, with the Australian focus on monitoring examples of sustainable urban development with a view of identifying key impediments for their duplication in main stream developments.

Project partners include: QUT (Project leader), CQUni, CSIRO and Bligh-Tanner (a Queensland-based engineering consultancy company). For more information on this initiative, please contact Mr Ted Gardner [t.gardner@cqu.edu.au](mailto:t.gardner@cqu.edu.au).

# Opportunities for Research

## Current Initiatives

### Brolga Lakes: Sustainable Living Project

Brolga Lakes is a sustainable development project with a unique combination of deep fresh water, shallow fresh water, brackish and salt water habitats that offers research opportunities on water quality and water management. Other opportunities include hydroponics production, wildlife habitat management, coastal and wetland studies, alternative energy generation and supply.

“Water Quality and Wetland Habitat Assessment” is one of four IRIS projects that will commence the development of Brolga Lakes sustainable living project. The project, developed by Dr Wilson and Ms Scannell, is expected to commence in 08/11. It is anticipated that long term assessment of water quality and habitat will be done by remote sensing, a technology developed by Dr Jayasurya and Dr Alahakoon.

### CQUni Tender Heritage, Environment and Sustainability Services Panel

IRIS is looking for individuals who have relevant research skills and interests to participate in a CQUni application to the Australian Government Department of Finance and Deregulation. This Department is seeking a panel of suppliers for the provision of specialist services in the following areas: heritage, environment, ecology, bushfire management, contamination and hazardous waste management, and built environment sustainability.

The scope of services they are wanting is very broad as the portfolio covers all types of public land and buildings (except defence owned) - everything from financial analysis, training package development, urban planning, oral history taking, air noise and water monitoring, weed control, environmental reporting, etc.

### CRC

IRIS is preparing for the CRC's 15th round of applications for 2012. The possibility to join the Regional Development CRC lead by the University of Adelaide, the ORE CRC (Optimising Resources Extraction) and other relevant CRCs is being investigated. Existing CRCs are listed on the DIISR [website](#). If your expertise aligns to Regional development or ORE, please contact us.

### Early Career

If you need help starting your research career with CQUni, contact us to discuss your ideas.

To discuss any of the opportunities on this page contact:

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[d.tunnicliff@cqu.edu.au](mailto:d.tunnicliff@cqu.edu.au)

## Grants & Tenders

### [Endeavour Awards](#)

Open 01/04 to 30/06

[Sugar Research Development Corporation](#) (SRDC) postgraduate scholarship for sugar technology innovation

Open 17/06 to 02/09

[Queensland Sustainable Energy Innovation Fund](#) (QSEIF)

Open 09/05 to 01/07

[14th Selection Round CRC](#) deadline 01/07

[Australia-India Council \(AIC\) cooperation program](#)

Due to open in June

[Envirofund - Ergon Energy](#)

Open 20/06 to 13/07

FIN11/AMPS013 Heritage, Environment and Sustainability Services Panel

Open now to 14/07

[Postdoctoral Fellowship Awards in Studying Complex Systems](#)

Open 9/05 to 15/07

[ATM 11ACMA013: Social and Market Research Services](#)

Closes 21/07

[John Stocker Postgraduate and postdoctoral Scholarships](#)

Open 20/06 to 22/07

[Cotton Research and Development Corporation](#) - Preliminary Research proposals

Open 20/06 to 25/07

[Sugar Research - Research, Development and Extension \(RD&E\) Proposals](#)

EOI invited 20/06 to 12/08

[ARC linkage round 2](#)

Open 06/07 to 16/09. Submit EOI by 06/07

# Researcher Profiles

## Welcome to IRIS

### Professor Marnie Campbell

CQUniversity's new Chair in Ecological Security, Marnie Campbell, relocated from the University of Tasmania to Gladstone to study the complex interactions between conservation, sustainability, food security, biosecurity, policy and risk.

Marnie has a double Bachelors degree, with Honours in Biological Science and Environmental Science from Murdoch University in Western Australia. Her PhD, on seagrass restoration ecology, is also from Murdoch University. Marnie has undertaken research in 17 countries, worked for five years with CSIRO, a number of years as an international consultant for the IMO and FAO (United Nations agencies), the World Conservation Union (IUCN), the Ministry of Fisheries of New Zealand and spent the last five years in academia.

Marnie's research at CQUni will still maintain an international focus, with work currently occurring in the Pacific (Palau, Guam), the Galapagos Islands, and the US but will also build upon an Australian focus, with work occurring in Western Australia, Tasmania, Victoria, and Queensland. Professor Campbell said a lot of her involvement in international projects is of relevance to the Central Queensland region.

Marnie said she would find plenty of research opportunities in Gladstone and the wider Port Curtis region. Her research focuses on how humans impact on the marine and coastal environment and ways to mitigate these impacts. Marnie is particularly interested in the dynamic relations between trade, such as ports and associated industry, with the environment, specifically introduced marine species (as a form of pollution, including marine debris), ecosystem restoration (restoring biological communities or single species, such as seagrasses), management of our resources (as conservation, marine protected area management) and how to harness the public via education and interpretation to ensure that a conservation or sustainability message and actions are available to all people. Read the full article [here](#).

### Mr Ted Gardner

Before joining IRIS in February 2011, Ted was principal research scientist in the Integrated Urban Water Systems group of CSIRO Land and Water. He lead Urban Water Security Research Alliance funded projects into decentralised technologies, and storm water harvesting and reuse in south-east Queensland. He was also principal scientist with the Queensland Department of Environment and Resource Management, leading the Urban Water Cycle group at the Environment and Resource Sciences Division in Indooroopilly.

Ted has had 40 years experience in the area of edaphology, irrigation and catchment hydrology/salinity, effluent reuse, and urban water sustainability. His special skill is systems thinking which he has applied to the urban water cycle over the last 15 years. He is also a frequent guest lecturer at Uof Q and QUT, in faculties ranging from agriculture to architecture to engineering on the topics of sustainable urban water cycle and water recycling.

Ted has won several awards including Australia Day Award of the Public Service Medal for his work on water recycling and urban water supply in 2005, was appointed as an Adjunct Associate Professor in the Schools Land and Food Sciences and Agriculture and Horticulture at the University of Queensland in 2005 and the Distinguished Service Award by the Australian Water Association, Queensland Branch, in 2004. Ted was also recently nominated for the Queensland Urban Utilities - Waterways Champion Award happening on 22 June 2011. If you would like to learn more about Ted's recent activities, click [here](#).



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Ms Rebecca Griffiths

Mr James Harris

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## IRIS Research Make the News

### Rocks treat irrigation water

Ben Kele, a PhD student at the Centre for Plant and Water Science (CPWS) and CQUni scientist, described his new water treatment system in the "Water Desalination Report" (WDR) in May 2011, and suggested that new "development means expensive desalination plants are no longer needed". While that prediction may prove to be a bit optimistic, Ben has identified a crystal lattice framework within volcanic rocks that has cation exchange properties. He said that the rocks may be used in an ion exchange medium to treat brackish groundwater – including wastewater from coal seam gas exploration – so that it can be used for irrigation. Ben said that the rocks can achieve a total dissolved solid (TDS) reduction of about 30 percent while improving the soil's sodium adsorption ratio (SAR) and increasing its suitability as irrigation water.

He told WDR, "We have applied feedwater with a TDS of 9,000 mg/L and reduced it to 6,000 mg/L. More importantly for us, we significantly increased the calcium and magnesium component while lowering the sodium concentration and reducing the SAR from 240 to 7." The units are regenerated with a high-cation solution that produces a brine volume equal to about 1 percent of the total water production. Treatment requires a minimum detention time of one hour. A 2 ML/d (0.5 MGD) pilot unit has been built and other water authorities have shown an interest in building larger facilities. Although the operational costs are low, the rocks are expensive to transport due to the weight. Ben said that he is now investigating methods of mimicking the ion exchange capabilities with synthetic resin.

Read the full story [here](#).

### IRIS student wins 3-minute thesis competition

The Safety Institute of Australia has announced the researcher, Elise Crawford, as the winner of the three-minute thesis competition, in the student researcher category. Elise is a research Masters in Health Science student at the Centre for Railway Engineering supervised by A/Professor Yvonne Toft.

Grabbing the attention of judges was Elise's research focus on how human factors can influence the way safety-focused organisations cope with the adoption of new technology in control rooms.

The new technologies have the potential to offer many advantages to organisations; however, they also introduce a certain element of risk.

"Given plenty of time, we can all adopt new technologies and learn how to use them. However safety critical organisations, such as the railways, air traffic control, power plants and distribution centres, cannot afford for their operators to be baffled by a new technology. They can't even tolerate a temporary lapse in control," explained Elise.

Elise is looking for answers to the following questions: What is this problem between humans and new technologies, and what slows down adoption? Some research has been conducted; however, no-one has addressed this topic in a holistic manner.

Successful application of Elise's research has the potential to improve the railway industry's success to take a greater role in transport provision. In this way, her research stands to affect us all. As she said in the '3 minute thesis', next time you're driving along and you feel the roads are less congested and road use is becoming more pleasurable, take a moment to think of our network controllers whose job has become a little more dependent on the technologies that assist them.

Read the full article [here](#).



Let us know if you are Making the News! Email [iris@cqu.edu.au](mailto:iris@cqu.edu.au)

## News in Focus

### Regional universities have emerged as the big winners in the 2011-12 federal budget.

**The Australian Higher Education, 10 May 2011 / <http://goo.gl/lkMcL>**

In addition to a \$500 million infrastructure boost over 5 years, exclusive to them, regional campuses finally got additional loading in recognition of the higher costs of education in regional and rural areas. [...] Under the new regime, universities can enrol as many students as qualify in an attempt to increase the number of 25-34 year olds with bachelors degrees by 2025.

### Flooded coalmines hit bottom line

**The Australian Financial Review, 24 May 2011 / <http://afr.com/>**

QLD's Coalmines still have the equivalent of a Sydney Harbour's worth of water—or 500 gegalitres trapped in their pits following last summer's flooding, which could threaten production and royalties. Three quarter of the state's 57 coal mines were affected by the heavy rains with the QRC estimating production could be down by 40 millions tonnes this financial year.

### General Electric Co: Solar Power Cheaper than Fossil Fuels in 5 years

**Bloomberg, 26 May 2011 / <http://goo.gl/hKPvB>**

Solar power may be cheaper than electricity generated by fossil fuels and nuclear reactors within three to five years because of innovations, said Mark M. Little, the global research director for General Electric Co. GE, based in Fairfield, Connecticut, announced in April that it had boosted the efficiency of thin-film solar panels to a record 12.8 %. Improving efficiency, or the amount of sunlight converted to electricity, would help reduce the costs without relying on subsidies. The thin-film panels will be manufactured at a plant that GE intends to open in 2013.

### It takes more than a shovel - diverse research 'behind the seams'

**CQUniNews, 2 June 2011, <http://goo.gl/LA0jr>**

QUniversity's footprint overlaps the Bowen Basin so it's no surprise there's a mining-related research focus across the institution. The real surprise is just how diverse the research needs to be to help underpin such a vital industry.

Our researchers including Dr Sanath Alahakoon are now focused on Hybrid Electric Systems for Heavy Machinery, as most of the heavy machinery used in resource industries is powered by Internal Combustion (IC) engines using fossil fuels. Read on using the link above.

**IRIS Postgraduate Students Conference 2011 is Coming Soon!**

**Watch this Space for Further Announcements...**

## Upcoming Events

26/06

[Environmental Research Event](#) / North Stradbroke Island

28/06

[Sustainable Development in Resource-Intensive Regions Conference](#) / CQUni Gladstone

06/07

[Asia Pacific Cities Summit](#) / Brisbane

19/07

[4th Annual North Queensland Resources Development](#) / Townsville

24/07

[3rd Coal Seam Gas Associated Water Conference](#) / Brisbane

26/07

[Water Management in Mining 2011](#) / Brisbane

27/07

[Making Cities Liveable Conference](#) / Noosa

27/07

[Australasian Industrial Ecology Conference](#) / Hunter Valley

15/08-19/08

[Smart Water Research Centre Short Course](#) / Brisbane

29/08

[Alternative Fuels Summit](#) / Brisbane

28/09

[Facing the Future - EIANZ Conference 2011](#) - Sunshine Coast



## Introducing IRIS Management Team

### **Anna Thomas, PhD Engineering, MBA finance**

Anna holds a PhD in Engineering and a MBA in Finance. In addition to her role as IRIS Director, Anna is the General Manager of Rail Innovation Australia Pty Ltd (RIA) and has more than 25 years experience in research management, technology and product development in academic and business environments.

### **Deborah Tunnickliff, MAppSci, GAICD.**

**Business Development Manager, Mackay, [d.tunnickliff@cqu.edu.au](mailto:d.tunnickliff@cqu.edu.au)**

Deborah has first-hand experience working within academic, government, and industry organizations and uses this experience to draw perspective when it comes to research and funding. She has worked as a researcher (predominantly in the areas of: governance, road safety, and drug and alcohol), a research manager (both for industry (QR) and for a CRC), a consultant (statistical, overseas), and a program manager (federal health). Deborah's passion is contributing to the application of research outcomes to real world issues. She has a keen interest in building and maintaining beneficial collaborative alliances, in particular between researchers and end users, and thoroughly enjoys her role as Business Development Manager for IRIS.

### **Christelle Catuogno, PhD Biochemistry**

**Senior Research Officer, Gladstone, [c.catuogno@cqu.edu.au](mailto:c.catuogno@cqu.edu.au)**

Christelle relocated to Australia from the UK in 2006. She was initially a researcher in biomedical engineering specialising in regenerative medicine, stem cell and cancer research. Before arriving in Gladstone, Christelle worked and lived in Montreal, London, Nancy and Sydney as a biomedical researcher and lecturer. She started her career at CQUni as research manager of the PELM Centre where she gained knowledge on resource industries. Within IRIS, her role is to report on the Institute's performance, coordinate networking events and conferences, investigate research opportunities and, research and project management.

### **Karen Chapman**

**Administration Officer, Rockhampton, [k.chapman@cqu.edu.au](mailto:k.chapman@cqu.edu.au)**

Karen was born and bred in Rockhampton so she has a thorough knowledge of the CQ region's activity and key players. Karen has been working for CQUniversity for 9 years, initially as an Administration Officer with the Institute for Sustainable Regional Development. Karen has been with IRIS since its creation in 2010 and provides the first point of contact for the Institute. She is the link between the Institute, Director and other University staff, students and outside organisations.

### **Vicky Kreiser, BBus Hotel Management, DipAcc**

**Financial Administration Officer, Rockhampton, [v.kreiser@cqu.edu.au](mailto:v.kreiser@cqu.edu.au)**

Vicky has been involved in finance and management over the past 18 years (Overseas and Australia) so she is well experienced in managing finance as well as administrative areas. She worked as an Executive admin and financial officer for the Rail CRC for three years and in 2007, she was appointed as an Administration Manager, Rail Innovation Australia. She was seconded part-time to IRIS in 2010 and, based on her strong background and experience in finance, she works with the IRIS Director assisting with preparation of budget and financial management reports.

**To become an IRIS member contact Karen Chapman**

## Contact us

Ms Deborah  
Tunnickliff



Dr Christelle  
Catuogno



Mrs Karen  
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