

Research update

Issue 2, June 2014

Message from the Director

Welcome to the Gas Industry Social and Environmental Research Alliance's (GISERA) biannual e-newsletter, the purpose of which is to update you on research progress and highlight GISERA activities.



Firstly, I would like to thank Dr. Peter Stone, former GISERA Director, for his leadership in guiding GISERA through its formative years. With the solid foundation of public trust established and projects well underway, GISERA moves into a new phase of growth and delivery of robust research. As the new GISERA Director, I will build on GISERA's achievements and oversee this dynamic period of development and successful project completion.

I would also like to extend a warm welcome to QGC as GISERA's newest member.

We've been busy over the last six months collecting and analysing data, providing trusted information to communities about coal seam and shale gas extraction processes and answering questions about potential environmental risks. Along the way we've learnt that the type and amount of information varies depending on the experience of local communities and the stage of development. We've also provided briefings and research updates to COAG Ministers and those at the GasFields Community Leaders Council meeting.

If you are looking for any research results they can be found on the [GISERA website](#). Also, if you have any feedback and suggestions for improving the newsletter please send them through. The contact details are at the bottom of this email.

I look forward to sharing more research updates with you over the next few years.

Cheers,

Damian Barrett, GISERA Director and CSIRO Research Director, Unconventional Gas.

News and Events

QGC joins GISERA

In March 2014 GISERA welcomed QGC as its newest member.

Community information sessions

Communities around Australia want trusted information about coal seam and shale gas, the techniques used in the extraction processes, the environmental risks and social impacts associated with these developments.

GISERA has been invited to several general public and indigenous community information sessions in Victoria, New South Wales, Northern Territory and Western Australia to provide information on the science behind gas development.

Project Updates



Surface and groundwater

Predicting groundwater impacts of coal seam gas (CSG) developments in the Surat Basin relies on a thorough understanding of groundwater systems and water flows. Take a look at the new groundwater video where Dr Axel Suckow explains how characterising the chemistry of groundwater and its 'age' helps to further understand the impacts of coal seam gas. He also explains the use of a novel technique to help characterise the permeability of aquitards - rock layers that hinder groundwater flow.



Greenhouse gas footprint

Methane seepage to the atmosphere is a common and naturally occurring phenomenon in sedimentary basins containing coal deposits such as the Surat Basin. The [current project](#) in the Greenhouse gas footprint portfolio addresses how much methane seeps out of the ground under natural circumstances.

An important first milestone of the project has now been completed and includes a comprehensive [literature review](#) that has identified several methods for locating and quantifying methane seeps that will now be tested in the subsequent pilot phase. The initial report recommends that Phase 2 of the project consist of two components:

- a field survey combining mobile survey and remote sensing methods and
- establishment of an atmospheric measurement station to measure methane concentrations.

The project will seek to establish a methane emissions data set that can be used to compare against changes in methane emission as CSG production in the Surat Basin increases. CSIRO is also investigating fugitive methane emissions from coal seam gas production facilities in NSW and Queensland. Results from both investigations will add to the bigger picture of assessing the CSG industry's whole of life cycle greenhouse gas emission footprint.



Agricultural land management

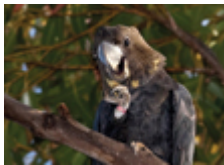
The issues of coexistence between farmers and the CSG industry in the shared space that is a farm business, a home and a resource extraction network has had little attention, until now.

One of our research projects has investigated how farmers perceive and value CSG developments on their and others' farms. A series of workshops with farmers from across a broad region undergoing CSG

development has identified some of the issues arising from large scale land use change.

[Research](#) shows that farmers believe that place identity was not well understood by CSG staff from non-rural backgrounds. Farmers struggled to explain their concerns because of the different way they interpreted their landscape and these differences were the cause of much frustration. Farmers felt that a change in culture within the CSG developers will be required if engagement with farmers is to improve and that efforts to employ local people in these communications would help. Other concerns identified are impacts to mental health and well being, loss of water resources and a range of issues arising from increased traffic volumes.

Other research projects underway in this portfolio examine the practical implications and opportunities for farmers when operating their existing farming or grazing business alongside the CSG industry.



Terrestrial biodiversity

Two projects are underway in this portfolio. For the first project a [literature review](#) identifying the need and range of approaches to prioritise biodiversity management strategies in the Brigalow Belt has been completed.

The second project is a collaboration between CSIRO, Queensland Herbarium and Queensland Murray-Darling Committee to help determine how fire affects the amount and distribution of plants and animals in regions impacted by coal seam gas activities. Over 50 sites with different fire histories in the Maranoa region have been surveyed. [Watch the video](#) to find out more.

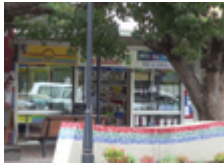


Marine environment

The [marine environment research](#) aims to improve understanding of the vulnerable components of the marine ecosystem to minimise impacts from LNG developments around Gladstone Harbour.

Turtles around Gladstone Harbour have been [tagged and tracked](#) using two types of technology - acoustic and satellite tagging systems - to identify their feeding areas and pathways used to move from one part of the harbour to the next. This will provide information to reduce impacts on turtles, a key marine asset.

In addition, 94 sites around Port Curtis were sampled to measure water quality and assess seagrass abundance and distribution. The data collected will be used to calibrate a model that will predict how seagrasses respond to impacts from developments.



Social and economic

The three research projects underway in the social and economic research aim to identify what communities want and need to help inform and support changes occurring in coal seam gas development regions.

The *Monitoring regional transition* project has identified that CSG development areas within the Surat and Bowen Basin regions have a [growing youth population](#) compared to other rural areas in Queensland. For a quick summary [read the article](#) published in The Conversation.

Earlier this year a telephone survey on community wellbeing for people living in the western downs area was conducted. The survey is part of the *Community function and well-being* project looking into how communities are [responding to CSG development](#). Processing and data analysis collected from the survey is underway.

A pilot trial for the next research phase of the *Understanding community aspirations* study has been completed. This phase investigates possible futures for communities in the Surat Basin and their desired legacy outcomes from CSG development.

