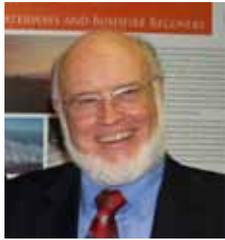


Management of the Coal Seam Gas Industry in NSW - the Science and the Law



by Adjunct Professor John Williams, Chair, ILWS Board

The science and the law surrounding the development of the coal seam gas (CSG) industry are issues of high public interest in NSW. To foster better understanding of the science and the law a Steering Committee composed of rural landholders, organizational and community representatives and a planning consultant engaged independent experts to contribute to an Independent Coal Seam Gas Science Forum held in Sydney at NSW Parliament House on 25th March, 2014.

Such experts had proven track records in industry, Government and private consulting and were recognized leaders in their professions. While the issues around development of a CSG industry in NSW have generated a high public profile there have been few safe places where public exchange of information, knowledge and understanding on the science and law could take place.

This [Coal Seam Gas Science & Law Forum](#) in my view proved to be a great opportunity for independent, objective and well-informed discussion and conversation on the science and the law around coal seam gas development to take place in an open and constructive way. The [forum program](#) consisted of three two-hour workshops.

The first workshop which I chaired as CSU representative was entitled "The hydrogeological science of CSG - what is it really telling us? It was conducted as a panel discussion around a set of questions and concerns on how the groundwater systems operates when a coal measure is depressurized to deliver

a gas flow.

Andrea Broughton, Principal, Hydrogeologist, Groundwater Solutions International, Dr Gavin Mudd, Senior Lecturer, Environmental Engineering, Monash University, Dr Phillip Pells, Principal, Geotechnical and Groundwater Engineer, Pells Consulting and Peter Serov, Director, Groundwater Ecologist, Stygoecologia interacted strongly to make a well-balanced and informative expert panel which openly set down the scientific issues around groundwater and CGS.

These focused on the potential risk of CSG production on the quality and quantity of groundwater aquifers, particularly on the impact of CSG water extraction on shallow freshwater resources. It was clear that when depressurization takes place water must flow towards the coal seam. The question is to be able to reliably predict how much, how quickly and where flow may take place.

Public confidence

Some of the key outcomes that I heard revolved around the confidence the public can have in the hydrological analysis within Environmental Impact Assessment (EIS) of a CSG project. Modelling currently conducted was considered to be rarely sufficient. Baseline data being generally absent, and stratigraphic knowledge to inform hydraulic processes usually quite limited. While the legislation such as the aquifer interference guidelines was satisfactory in addressing the key groundwater science, experience is that compliance and implementation are not independently audited.

Perhaps the greatest issue is that EIS process cannot adequately evaluate cumulative impacts across the groundwater system. The need for EIS to be set within a broader regional strategic land-use plan was highlighted. There was strong feeling that EIS conduct and subsequent assessment needed to be independently exercised and strongly based in robust science to give public confidence. How and where the public can find robust, trusted independent scientific analysis was a question voiced many times by the audience

and the panel. There was no clear answer. It was a rich discussion and this was but one of the many issues examined.

The second Workshop examined the adequacy of the laws, regulations and recommended improvements. The focus of discussion was on the strengths and weaknesses of current legislation, the rights and obligations of landholders and an evaluation of "make good" provisions for CSG impacts on both land and water. This conversation was chaired by Peter Martin, a landholder from Southern Highland with a strong business background. The discussion clearly indicated that the legal process and that of arbitration are in an engagement where the power and influence distribution is far from equitable and the elements of procedural justice are often absent. The question for me sits fundamentally in the nature of the legislation for gas exploration and development. With a new land use that occupies large areas of land surface with gas fields and profound changes to landscape amenity, are the current onshore gas legislation appropriate for the 21st century?

In the final session chaired by Warwick Giblin, Managing Director, OzEnvironmental Pty Ltd. Founding President and fellow of EIANZ, Warwick sought to provide an overview of key issues & to map some ways forward. All panelists were involved again and a constructive review took place. The forum demonstrated that the science and law which currently are being applied to the development of a CSG industry are inadequate to provide the necessary governance and give confidence that assessment is strategic and based on robust, open and independent scrutiny.

Generally there is inadequate solid scientific and legal information, knowledge and analysis seen and trusted to be independent and objective that can assist the general public to build confidence in this emerging industry and potentially a new and major land-use.

To me this forum initiated a process which merits further development and application. *(more next page)*

I wonder if CSU's Institute for Land, Water and Society could help address this lack of safe places and processes for public discussion on the knowledge which can assist a civil society to examine how best to manage the sustainable development of a CSG industry within our Australian landscapes?

Further Reading

NSW Chief Scientist & Engineer.

(2013) [Initial report on the Independent Review of Coal Seam Gas Activities in NSW](#), July 2013

Williams, J., Stubbs, T. & Milligan, A. (2012) [An analysis of coal seam gas production and natural resource management in Australia](#), A report prepared for the Australian Council of Environmental Deans and Directors (ACEDD) by John Williams Scientific Services Pty Ltd, Canberra, Australia.

Climate Change Adaptation: Great Planning, Little Action

Professor Kevin Parton visited Siem Reap, Cambodia recently where he presented an invited paper to the Environmental Economics Program for South East Asia Conference (28th February, 2014) titled "Climate Change Adaptation: Great Planning, Little Action".

The conference was well attended, with 146 participants. Most countries in south-east Asia were represented, as well as China. Prof Parton said it was one of the best international conferences that he has ever attended. In addition to his, there were three other keynote presentations.

"All were memorable," said Prof Parton. "What was just as encouraging was the large number of young professional in attendance. There were some excellent contributed papers, including one from China, which showed the enormous benefits that China would obtain from the introduction of a carbon tax."

In addition, Prof Parton was able to renew links for further collaboration at the conference, as well as establish additional future contacts. This was especially important to his work in the Philippines.



Above: Ian Coxhead, Arriya Mung-santi and Kevin Parton

While most of his recent work has been directed towards climate change mitigation, where urgent policy action is required, this Siem Reap paper returned to some of Prof Parton's earlier work on climate change adaptation. The paper showed that if climate change is well-bounded, as described in global climate change models, then its slow moving characteristics over a number of decades mean that most climate change adaptation by business or government will not be urgent. There will be time to adapt to the changing climate as it unfolds. So perhaps wheat is grown in a location now, but it won't be in 2050 because the climate is changing. However, there is plenty of time between now and 2050 to make the shift. There is no need to adapt next year.

Despite this, there are some instances where it is sensible to make climate change adaptation decisions now. These are where the future climate event has a high probability of occurring, as in the case of an increasing number of heatwaves during an Australian summer. Thankfully, health services across Australia are already adapting their operations to confront this challenge. Another example is where the climate change effect is already occurring, such as high tides eroding properties in Small Island Developing States (SIDS). Unfortunately, there is not enough effort to combat this issue.

The paper went on to show that the analysis that is the basis of the above climate change adaptation prescriptions is incomplete. It depends on global climate change models that are probabilistically well bounded. If, as most climate scientists suggest, climate change is

discontinuous, then such discontinuities will need to be incorporated into our analysis. This suggests that new methods of appraisal will be required that probably should incorporate intuitive and heuristics approaches. These methods are at an embryonic stage of development.

Community Engagement

The "real scientist"

A/Prof David Watson gave a presentation on mistletoe in grassy box woodlands to an Australian Plants Society meeting in Albury, Saturday, March 29; on bird-mistletoe interactions to the Southern Highlands Group of Birds Australia at Mittagong, Tuesday, April 8, and on parasitic plants as facilitators to the Australian Native Plants Society, Thursday April 10 in Canberra.

For the week April 20-26, while out in the field in western NSW, Dave was the "real scientist" for the @realscientists twitter account which has a different scientist taking the reins each week. Eleven to 12,000 people follow this world wide and Dave tweeted on a range of topics including day-to-day experiences out in the field, grant-writing, work-life balance and, of course, mistletoes, bird ecology and arid zone flora and fauna giving followers a "window" into his life.

An interesting outcome of Dave's tweeting about his research while out in the field was feedback from Bindi Vanzella, the Business Development Co-ordinator for Greening Australia Capital Region, who sent a copy of a tweet conversation she had with Dave regarding management tips for lone trees with lots of mistletoe to colleagues and land-holders.

His tips - which are to fence off; plant nectar rich understorey shrubs; and install nesting boxes for birds and brush tailed possums - were passed directly to implementation staff and are already informing on-ground actions in the ACT.