Interim Independent Expert Scientific Committee for Coal Seam Gas and Coal Mining

Knowledge Management Framework & Prioritisation Workshop

Summary of Proceedings

6 and 7 February 2012

Brisbane

At the first meeting of the Interim Independent Expert Scientific Committee for Coal Seam Gas and Coal Mining (the Committee) it was decided to hold a workshop to gain a better understanding of the scope of existing research and significant knowledge and information gaps, and to develop a framework for research investment along with high priority research activities that could be commissioned in 2011-12. This workshop was held on the 6 and 7 February 2012 in Brisbane.

The Chair of the Interim Committee, Professor Craig Simmons, was joined by Emeritus Professor Peter Flood, Professor John Langford, Associate Professor David Laurence and Professor Chris Moran. Ms Jane Coram was unable to attend this workshop due to a prior commitment.

The first day consisted of speakers from Community Groups, Research organisations, States and Industry. The following speakers spoke:

Ian Hayllor - Basin Sustainability Alliance

Francesca Adreoni - Namoi Catchment Management Area

Dr Sue Vink - Principal Research Fellow, Sustainable Minerals Institute, University of Queensland

Professor Ian Acworth - Director, Connected Waters Initiative, University of New South Wales

Adam Sincock - National Water Commission

Dr Stuart Minchin – Chief, Environmental Geoscience Division, Geoscience Australia

Bill Young - Director, Water for a Healthy Country Flagship

Martin Hoffman - Deputy Secretary, DRET Standing Committee on Energy & Resources Working Group

Ben Bruce – South Australian Government

Randall Cox and Sanjeev Pandey - Queensland Water Commission

George Gates – New South Wales Water

Chris McCombe - Minerals Council of Australia

Arti Sharma and Andrew Barger - Queensland Resources Council

Brian French and Stephen Downs - Xstrata

Roger Wischusen - Australian Coal Associated Research Program

Naaz Kerin - Australian Petroleum Production and Exploration Association Ltd (APPEA)

The second day was used by the committee to workshop the information from day one to inform recommendations for research priorities.

It was agreed that broadly similar issues and gaps were identified by many of the speakers. The k**ey messages from the presentations included:**

- That a large amount of research and knowledge acquisition is currently being conducted or being commissioned in the coal seam gas arena (“this is an already crowded paddock”). However, at this time is not clear if the breadth or depth of the current suite of research is sufficient to fully address the range of issues that are being tackled by that research. Moreover, the “why” for doing the work that is being proposed was generally missing. Coal mining was rarely discussed, even by the industry representatives, although the scope for the workshop was for both coal seam gas and coal mining.
- There is a need for:

    - an intellectual framework to better define what questions we need to answer
    - collation of current research projects, their scope and when they are due to be completed. (Noting that one or two projects completed or in progress doesn't mean that science question has been resolved for a particular topic the research)
    - risk based approach is required and this ultimately need to be quantitative not qualitative
    - better integration of the geochemistry and isotope data with modelling
    - basin scale assessment/analysis of both surface water and groundwater
    - validation/calibration of the groundwater models that have been developed
- Specific research is required to understand the:
    - impacts of coal seam gas extraction on aquifers (interconnection)
    - injection processes
    - salt management
    - cumulative risks
- Lessons learnt :
    - A process involving implementation of Incremental decisions in the context of an adaptive management process is not effective.
    - That while a numerical model is needed to aid prediction, the model itself is not the objective.

The Committee analysed the presentations and proposed the following six priority streams of research and knowledge acquisition.

1. A risk assessment framework, to enable the bioregional assessments. It was considered that the risk frameworks presented by the National Water Commission or the Namoi Catchment Management Authority risk frameworks are possible foundation documents. This would be used to communicate more effectively.
2. Knowledge projects and foundational science to better understand the impacts.
3. Capacity building – both infrastructure and people – to better enable the research to be done. For example set up a fellowship scheme for experienced international personnel
4. Data strategy and infrastructure (data availability and accessibility) to coordinate accumulation of information. This acknowledges there is a vast amount of data already collected that is not currently accessible. Engagement with the Bureau of Meteorology that has the mandate to be the key repository of national water data is needed. Both the Bureau of Meteorology and Geosciences Australia need to be engaged about data needs and the mechanisms for acquisition and storage. Engagement with stakeholders in particular the states is also required.
5. Collaboration between major research agencies and institutions for example Gas Industry Social & Environmental Research Alliance, Sustainable Minerals Institute, National Ground Water Centre, University of New South Wales. This will require developing the mechanisms to ensure effective outcomes and processes.
6. Basin scale modelling which would provide data to support the understanding of risks and provide data for foundational research. Engagement with industry and state governments to enable currently collected data to be used. For example:

a. Only data from specifically constructed monitoring bores are reported to Qld Govt data from operational recovery bores are not.
b. Legal issues of ownership of the bores and consequent requirements for reporting and monitoring data to a central repository (e.g. state government or BOM).

Further discussion then occurred to better scope the risk assessment framework or spatial risk statements.

It was proposed that there were three key areas to address:

1. Risk Framework –ask the big questions? This would be openly communicated and require engagement of the states, industry, communities, Catchment Management Authorities and to both ask and answer the questions.

   The National Water Commission and Namoi Catchment Management Authority risk frameworks should be reviewed along with other respected risk frameworks' (including overseas) to provide the basis for producing a (national) standardised framework for conducting the bioregional assessments.. This will ensure consistency of content and extent of analysis of cumulative impacts for the bioregional assessments, facilitate comparison of the assessments between regions, and enable more effective communication of the outcomes.

2. Regional/Risks (Broad scale) - All prospective (i.e. for CSG extraction and/or coal mining) regions to have an assessment done. Bioregional assessment will comprise region specific/ spatial risk assessments - noting that a rapid risk prioritisation project has been commissioned with Geosciences Australia to define priority NRM regions for bioregional assessments, with a draft report due on March 9.

   Basin areas for potential work based on presentations from Day 1 of the workshop were:

   - Greenfield sites (no current development) – Ackaringa, SA
   - Sites where development is underway - Gunedah, NSW & Clarence, NSW
   - Fully operational sites – Surat, Qld & Hunter , NSW

3. Risk factors that are specific to a particular region - There is a need for targeted research/information acquisition to provide the regionally specific information required to address those risk factors that are unique to a particular bioregion. It was considered that at this point only a hazard assessment is required – don't need to consider mitigation as this is the role of the proponent through the Environmental Impact Assessment process.

   A preliminary identification of what assets are at risk (within the scope of Coal Seam Gas and Coal Mining impacts on water resources) was also conducted. The following where identified:

   - Aquatic ecosystems
   - Terrestrial ecosystems
   - Drinking water supply

- Irrigation water supply
- Surface infrastructure
- Reputation of Science
- Industry
- Regional communities
- Aquifers/Ground water resources

The issue of fraccing chemicals is an important one. It was considered that the Committee needed to build on and enhance the work that the United State Environment Protection Agency is doing on potential impacts of fraccing chemicals on drinking water – rather than replicating it.

To further develop the risk framework associated with the bioregional assessment process a two day workshop would be organised in mid March, inviting key Catchment Management Authorities to be involved. The scope of this would be further developed before the meeting on the 22 February 2012 and agreed to at that meeting.

The Committee concluded the day with an assessment of what where the drivers for research investment.

Over-arching aspects that need to be considered for assessing impacts on water resources:

- Quantity
- Quality
- Disruptions (physical)
- Surface water and ground water interaction
- Flow regime and path

Priority issues and drivers affecting the above key aspects were noted as:

- Aquifer Inter-Connectivity – (fraccing – the physical process affecting this)
- Disruption of surface infrastructure and water flow pathways
- Subsidence
- Co-produced water and salt management (Coal Seam Gas)
- Bore integrity- installation and decommissioning
- Fraccing process
- Drinking water
- Recharge – impacts on recharge (identified by the Committee as an area that has received little attention, especially in the context of large open cut mines
- Aquatic ecosystems

Overall hazard and risk assessment needs to be placed in the context of life cycle and value chain aspects of coal seam gas and coal mining.

Attendees:

Committee Members:

Professor Craig Simmons
Professor John Langford
Emeritus Professor Peter Flood
Associate Professor David Laurence
Professor Chris Moran

SECRETARIAT & SUPPORT STAFF:

Alex Rankin
Dr David Jones
Helen Vooren
Pamela Finger
Peter Baker

Guests:

Ian Hayllor - Basin Sustainability Alliance
Francesca Adreoni - Namoi Catchment Management Area

Martin Hoffman - Deputy Secretary, DRET Standing Committee on Energy & Resources Working Group
Dr Sue Vink - Principal Research Fellow, Sustainable Minerals Institute, University of Queensland
Dr Stuart Minchin – Chief, Environmental Geoscience Division, Geoscience Australia
Professor Ian Acworth - Director, Connected Waters Initiative, University of New South Wales
Adam Sincock - National Water Commission
Bill Young - Director, Water for a Healthy Country Flagship, CSIRO
Ben Jarvis - Department of Resource, Energy and Tourism
Julia Playford - Queensland Department of Environment and Resource Management
Christine Williams - Queensland Department of Environment and Resource Management
Anne Lenz – Queensland Department of Environment and Resource Management
Petrina Prowse – Queensland Department of Environment and Resource Management
Sanjeev Pandey - Queensland Water Commission
Randall Cox- Queensland Water Commission
George Gates –New South Wales Office of Water
Ben Bruce – South Australian Government (by phone)
Chris McCombe - Minerals Council of Australia
Arti Sharma- Queensland Resources Council
Andrew Barger - Queensland Resources Council
Brian French- Xstrata
Stephen Downs - Xstrata
Roger Wischusen - Australian Coal Associated Research Program
Naaz Kerin - Australian Petroleum Production and Exploration Association Ltd

Arti Sharma - New South Wales Minerals Council
Andrew Barger - Queensland Resources Council
Claire Cote - Anglo American
Jeroen Van Dillewijn - Arrow Energy
Jo Mawby - Santos
Andrew Moser – Origin Energy
Shaun Davidge - Santos
John Ross - AGL Electrical
Stuart Galway - AGL Electrical
Rob Millhouse - QGL
Jeff Jurinak - QGL
Mark Riksen - QGL
Sarah Moodie - Origin Energy