

**Independent Expert Scientific Committee on Coal Seam Gas and
Large Coal Mining Development (IESC)
Minutes – Meeting 22, 15 October 2014**

**MINUTES – Meeting 22
Dialogue Conference Centre, Canberra ACT**

Attendance and Apologies

IN ATTENDANCE

Emeritus Professor Peter Flood (Acting Chair)

Emeritus Professor Angela Arthington

Ms Jane Coram

Dr Andrew Johnson

Mr Jim McDonald

Professor Dayanthi Nugegoda

APOLOGIES

Ms Lisa Corbyn (Chair)

Professor Craig Simmons (Deputy Chair)

OFFICE OF WATER SCIENCE (OWS) - SECRETARIAT AND SUPPORT

Gayle Milnes

Sean Lane

Helen Vooren

OTHER STAFF OF THE DEPARTMENT OF THE ENVIRONMENT

Sophie Alexander (Item 1) Office of Water Science	Anthony Swirepik (Item 4) Office of Water Science
Edwina Johnson (Item 3) Office of Water Science	Moya Tomlinson (Item 4) Office of Water Science
James Hill (Item 3) Office of Water Science	Bruce Gray (Item 4) Office of Water Science
Craig Watson (Item 3) Office of Water Science	Anna Newton-Walters (Item 4) Office of Water Science
Geraldine Cusack (Item 3) Office of Water Science	Elizabeth Paul (Item 4) Chemical Assessment Section, Environmental Quality Division
Scott Lawson (Item 3,4) Office of Water Science	Olga Braga (Item 4) Chemical Assessment Section, Environmental Quality Division

INVITED GUESTS

Dr Brent Henderson (Item 3) CSIRO	Dr Sneha Satya (Item 4) NICNAS
Mr Richard Mount (Item 3) Bureau of Meteorology	Professor Ray Froend (Item 4) Edith Cowan University
Dr Trevor Dhu (Item 3) Geoscience Australia	Dr Martin Andersen (Item 4) UNSW
Ms Bronwyn Ray (Item 3) Bureau of Meteorology	

The meeting commenced at 9.10 am on 15 October 2014.

1. Welcome and Introductions

The Acting Chair, Emeritus Professor Peter Flood, welcomed members of the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (IESC) to the meeting.

Apologies were received from Ms Lisa Corbyn (Chair) and Professor Craig Simmons (Deputy Chair).

1.1 Acknowledgement of country

The Chair acknowledged the traditional owners, past and present, on whose land this meeting was held.

1.2 Declaration of interest

Before the meeting commenced, IESC members completed the Meeting Specific Declaration of Interest. No determinations were recorded at this meeting.

1.3 Confirmation of agenda

The IESC endorsed the agenda for Meeting 22.

1.4 Action items

Completed items were noted. A number of follow-up items were listed on the agenda for this or later meetings.

1.5 Confirmation of out-of-session decisions

The Chair noted the following out-of-session items:

- Minutes of the IESC's twenty-first meeting (9-10 September 2014) were agreed out-of-session and posted on the IESC's website; and
- Advice for two projects were finalised, agreed out-of-session and provided to regulators:
 - i. the final advice for Muja Coal Mine Extension WA; and
 - ii. the advice for Russell Vale Longwall 6 which was agreed to be provided out of session as it related to the larger Russell Vale Colliery Underground Expansion project that had been provided previously.

1.6 Correspondence

The IESC noted the status of correspondence to 26 September 2014.

1.7 Environmental scan

The Office of Water Science (OWS) provided an update on items of interest since the September IESC meeting including meetings held with the state government regulators, industry representatives and the Gas Industry Social and Environmental Alliance (GISERA).

OWS and IESC members reported on attendance at forthcoming meetings including a meeting scheduled with the NSW Chief Scientist and Engineer, Professor Mary O’Kane for 28 October 2014.

Committee Member Professor Angela Arthington advised that she will be attending a briefing in Brisbane with CSIRO and the University of Queensland on ‘*Onshore gas – the role of science*’ on 29 October 2014.

Committee Member Professor Dayanthi Nugegoda advised that she has accepted an invitation to join the Victorian Scientific Reference Panel and that her first meeting with that group will be in December. IESC member Professor Craig Simmons is also a member of the panel.

1.8 Forward Planning Agenda

The IESC noted the forward planning agenda and items due for consideration through to April 2015.

The IESC indicated interest to hear more about both industry research, and the role and functions of the GISERA. OWS has been requested to liaise with Dr Damien Barrett of CSIRO regarding the GISERA projects and to request a presentation.

2. **Advice**

There were no requests for advice for this meeting.

3. **Bioregional Assessments**

3.1 Bioregional Assessments progress

An update on the status and progress of the various components of the Bioregional Assessment was provided.

A number of coal and coal seam gas resource assessment products were expected to be published within the next month.

The IESC suggested that the Communications and Engagement Strategy and Operation Plan include an articulation of matters outside the scope of bioregional assessments and refer to the narrative considered at the August 2014 meeting. The meeting schedule within the 2014-15 Operational Plan for the Bioregional Assessments was noted.

A review had recently been undertaken and as a result a series of changes to scope and timeframes had been proposed, with further a detail to be provided at the November

2014 meeting. The IESC requested that the attachment include further information (such as risk trends arrows or further text) to provide the IESC with a better understanding of areas of ongoing risk.

Presentation on the Lake Eyre Basin Arkaringa, Pedirka, Rivers Monitoring Projects:
Deliverable Package 1

OWS presented to the IESC on the draft outcomes of projects being undertaken by the South Australian government that will feed into the Lake Eyre Basin (LEB) Bioregional Assessment project. Key outputs for the projects include:

- development of hydrological models;
- understanding the physical processes (geomorphology) in ephemeral LEB watercourses;
- classification of LEB aquatic ecosystems; and
- the identification and prioritisation of relevant surface water dependent receptors in the Galilee subregion.

3.2 Bioregional Assessment presentation: Impacts: Direct, indirect and cumulative

Dr Trevor Dhu, Bioregional Assessments Science Director, Geoscience Australia and other members of the Bioregional Assessment Science Leadership Group presented to the IESC on the proposed approach to assessing the direct, indirect and cumulative impacts of coal seam gas and coal mining development.

Key points discussed included:

- that direct impacts are taken to be hydrological impacts, indirect impacts are taken to be first order water-mediated impacts and by construction the bioregional assessments are analysing the cumulative impacts across coal and CSG developments on water resources;
- there will be limited ability to disaggregate the results of the cumulative impact analysis to individual developments, but the assessments will develop frameworks which will be made publicly available and can then be used by parties with appropriate technical resources; and
- that ecological and socio-cultural values will not always coincide and where an asset has different ecological or socio-cultural aspects, these will be reported separately.

4. Research

4.1 Update on Research

Key developments on research were reported to and discussed by the IESC, including:

- outcomes from the review workshop on the final report for the monitoring and management of subsidence induced by longwall coal mining project;
- progress on the Faults, Aquitards and Modelling research project; and

- the recent public release of three reports (*Field survey of EPBC listed GAB fed springs Volume 1 and 2* and *Groundwater modelling to simulate the impacts of Coal Seam Gas extraction*) and the *Managing Co-produced Water* factsheet.

4.2 Human and Environmental Health Risk Assessment – Draft Final Report

Dr Sneha Satya from the National Industrial Chemicals Notification and Assessment Scheme (NICNAS) presented to the IESC on the draft final report *Chemicals used for coal seam gas drilling and hydraulic fracturing – human health and environmental risks associated with surface spills and leaks*.

The IESC provided some initial comments on the draft undertaking to provide additional comments and feedback before the next meeting.

The Chair thanked Dr Satya for participating in the meeting noting the importance of the work and the necessity for the report to be finalised.

4.3 Hot Science Topics – Connected surface water groundwater systems: Potential effects of water management on water quality and streambed ecology

Dr Martin Andersen, Senior Lecturer in the Water Research Laboratory in the School of Civil Engineering at University of New South Wales presented to the IESC on work being undertaken in subsurface hydrogeochemistry by the Connected Waters Initiative Research Centre.

Dr Andersen outlined work that is being undertaken on changes to surface water-groundwater interactions in the Namoi River and how those changes can affect stream flow. The Namoi has switched to a losing system at the location of the study, which could affect stream flow at low flow conditions, however there are lag-times of up to 20 years in some cases.

Monitoring work being is also being undertaken on streambed chemistry in Maules Creek a tributary of the Namoi River. Changes in subsurface flow paths caused by changes in water use have impacts on processes controlling water quality. Examples were given of mobilisation of arsenic and ferrous iron along redox gradients in subsurface flow paths.

There have also been studies of the streambed ecology in Maules Creek. The presence or abundance of stygofauna can be linked to redox conditions and changed flow paths.

The Chair thanked Dr Andersen for sharing the research findings of research he leads at the university and providing the IESC with some thought-provoking data. Dr Andersen was requested to keep the IESC informed of progress of this work.

4.4 Hot Science Topics – Phreatophyte response to groundwater drawdown.

Professor Ray Froend, Professor in the School of Natural Science and Director of the Centre for Ecosystem Management at Edith Cowan University WA, presented to the IESC on his work on groundwater dependent ecosystems in WA, the relationships between vegetation and groundwater and how the abundance of species change over time when there is groundwater drawdown. The research has been aided by the availability of longitudinal monitoring data from the 1970's and in some cases earlier.

In response to questions Professor Froend expressed caution regarding the lack of long term data on artificial maintenance (surface watering) as an effective strategy for rehabilitation for disturbed areas from his observations in the Pilbara region. Where there are areas of high ecological value vegetation, there is a need to understand and demonstrate the links between vegetation and the groundwater accessed by the vegetation and to determine the nature of the connectivity between the aquifer being affected by pumping and the groundwater used by the vegetation. The response of the vegetation to drawdown is related to the magnitude of the drawdown and the risks.

The Chair thanked Professor Froend for his insights and for sharing his opinions supported by his research findings. The value of the longitudinal monitoring data used in this work and coupled with his own field studies is of ongoing interest to the IESC and Professor Froend was requested to keep the IESC informed of progress of this work.

Close of Meeting

The Chair thanked everyone for their contribution to the meeting.

Next Meeting

The next meeting is scheduled for 11-13 November 2014 in Canberra.

The meeting closed at 4.00pm 15 October 2014.

Minutes confirmed as true and correct:

Emeritus Professor Peter Flood
Acting IESC Chair

27 October 2014