

**Independent Expert Scientific Committee on Coal Seam Gas and
Large Coal Mining Development (IESC)
Minutes – Meeting 17, 13-14 May 2014**

**MINUTES – Meeting 17
13-14 May 2014**

Old Parliament House, Canberra

Attendance and Apologies

IN ATTENDANCE

Ms Lisa Corbyn (Chair)
Professor Craig Simmons
Emeritus Professor Angela Arthington
Ms Jane Coram
Mr Jim McDonald
Dr Andrew Johnson (by phone)

APOLOGIES

Emeritus Professor Peter Flood
Professor Dayanthi Nugegoda

OFFICE OF WATER SCIENCE (OWS) - SECRETARIAT AND SUPPORT

Gayle Milnes
Peter Baker
Sean Lane
Kimberley Hammond
Helen Vooren

OTHER STAFF OF THE DEPARTMENT OF THE ENVIRONMENT

Tony Slatyer (Day 2: Item 6.2) First Assistant Secretary Water Reform Division	Natasha Amerasinghe (Day 1-2: Item 2) Office of Water Science
Fiona Beynon (Days 1-2: Item 2) Office of Water Science	Mitchell Bouma (Days 1-2: Item 2) Office of Water Science
Mark Say (Days 1-2: Item 2) Office of Water Science	Scott Lawson (Days 1-2: Item 2) Office of Water Science
Anthony Swirepik (Day 1: Item 4) Office of Water Science	Bruce Gray (Day 1: Item 4) Office of Water Science
Edwina Johnson (Day 2: Item 6) Office of Water Science	Sophie Alexander (Day 1: Item 1, 3) Office of Water Science
Geraldine Cusack (Day 2: Item 6) Office of Water Science	Crystal Bradley (Day 2: Item 6) Office of Water Science
Max Collett (Days 1-2: Item 2) Office of Water Science	Ben Roudnew (Day 1: Item 4) Office of Water Science
Emily Turner (Days 1-2: Item 2) Office of Water Science	Berlinda Bowler (Day 2: Item 6) Office of Water Science

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Moya Tomlinson (Days 1: Item 2, 4) Office of Water Science	Dieter Kluger (Day 1: Item 3) Environmental Assessment and Compliance Division
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INVITED GUESTS

Dr Paul Greenfield AO (Day 1: Item 3), Expert Panel for Major Coal Seam Gas Projects	Becky Schmidt (Day 2 : Item 6) CSIRO
David Post (Day 2: Item 6) CSIRO	Brent Henderson (Day 2: Item 6) CSIRO
Simon Barry (Day 2: Item 6) CSIRO	Stephen Lewis (Day 2: Item 6) Geoscience Australia
Graham Harvey (Day 1: Item 4.2) NICNAS	Rob Jeffrey (Day 1: Item 4.2) CSIRO

The meeting commenced at 9.11 am on 13 May 2014.

1. Welcome and Introductions

The Chair welcomed members of the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (IESC) to the meeting, noting apologies tendered from:

- Emeritus Professor Peter Flood; and
- Professor Dayanthi Nugegoda.

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. The determinations recorded at this meeting are available at *Attachment A*.

Prior to the circulation of the meeting papers, Mr McDonald advised the Chair of a possible perception of conflict of interest in relation to the request for IESC advice from the New South Wales Mining and Petroleum Gateway Panel on the Caroon Coal project (Item 2.1). Mr McDonald advised that he had previously owned land covered by the BHP exploration licence, but had sold the land 15 years ago. A portion of the land was now owned by his cousin.

Access to the Caroon papers by Mr McDonald was restricted while, in accordance with IESC Probity Framework, probity advice was sought. Mr. McDonald advised that he has no financial interest in any property nor any financial interest or dealings with his cousin's interests. Based on this advice, and considering that the NSW Government's

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request for advice from the IESC was sought at the Gateway stage, prior to an assessment being undertaken or an approval being made, the Chair determined that there was not a conflict of interest.

To ensure that there would be no perception of a conflict of interest, Mr. McDonald did not participate in the IESC's finalisation of the advice to the New South Wales Mining and Petroleum Gateway Panel.

1.3 Confirmation of agenda

The IESC endorsed the agenda for Meeting 17.

1.4 Action items

Completed items were noted and follow-up items were listed on the agenda for discussion later in the meeting.

1.5 Confirmation of out-of-session decisions

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

- Minutes of the IESC's sixteenth meeting (8-9 April 2014) were agreed out-of-session and posted on the IESC's website.

1.6 Correspondence

The IESC noted the action taken and the status of correspondence to 30 April 2014.

1.7 Environmental scan

A verbal update was provided by Office of Water Science (OWS) on the following items of interest:

- i. *Carmichael Coal and Rail Project* - A meeting to discuss key elements of the IESC's advice on the project provided on 16 December 2013 had been held between the Commonwealth Department of the Environment, the Queensland Office of the Coordinator-General, the Queensland Department of Natural Resources and Mines and the proponent for the Carmichael Coal Mine and Rail Project (Adani). Items discussed included model boundary conditions, groundwater flows and the coherence of the Rewan Formation as an aquitard.

The IESC subsequently reviewed its advice to the Commonwealth and Queensland governments on the Carmichael Coal Mine and Rail Project in the Galilee basin, in light of the public release of a review of the project's groundwater assessment commissioned by the Queensland Government and completed by HydroSimulations. This review was released as part of the Queensland Coordinator-General's recent decision to approve this project with conditions.

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The IESC reaffirmed its advice that the groundwater flow regime (including both flow patterns and magnitude) needs to be validated in order to fully understand and manage potential impacts to EPBC listed springs. The IESC's original advice was based on the information contained in the draft Supplementary Environmental Impact Statement provided by the Commonwealth and Queensland government regulators at the time of the request. Specifically, the IESC highlighted that the use of a boundary condition, which appeared to act as a no flow boundary, may affect the modelling predictions. While subsequent information more recently released by the proponent clarifies that the western boundary was not a no flow boundary, an investigation is still warranted into the precise nature of this boundary condition, its physical justification, its implementation in the numerical model, and its impacts on the modelling results. Further, the IESC was well aware of and acknowledged that topographically controlled flow, sometimes referred to as Tothian groundwater flow, is indeed possible (as originally noted in the IESC's advice in referring to both topographically driven flow and when noting supporting theoretical research in this regard) and may explain the modelling results. However, the existence of local topographically driven flow that persists to a significant depth in the presence of significant geological heterogeneity (layering), with no indication of the expected regional groundwater flow to the southwest being apparent, whilst theoretically possible should be validated from a scientific viewpoint. An explanation for the absence of the regional groundwater flow pattern to the south west is also warranted. Clarification and resolution of these issues are fundamental to both the groundwater flow conceptualisation and model results.

The IESC appreciates the uncertainties involved in the science of groundwater hydrology and the complexity of groundwater modelling. This is further exacerbated by the limited availability of data in the Galilee Basin. Reducing uncertainty about the groundwater flow regime, especially in the deeper groundwater system, will be important for protection of the springs and would help respond to questions remaining about the conclusions being drawn in the proponent's assessment. In this case, the proponent did not provide a model uncertainty analysis to substantiate the robustness of its groundwater flow conceptualisation and model results. An increase in the availability of data, including both head and flow information, would help to validate the groundwater model results, and reduce the uncertainty associated with the groundwater flow regime. An uncertainty analysis of the groundwater model would allow a better understanding of the impacts on the Mellaluka and Doongmabulla Springs Complexes, and Carmichael River.

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The IESC agreed to incorporate this information and a clarification on these issues in the Chair's letter to the Minister.

- ii. Outcomes of the recently released Commission of Audit report and the recommendations contained within concerning a review of Commonwealth committees.
- iii. Feedback was provided regarding a number of meetings with industry bodies that the OWS has participated in during the previous month.
 - Members of the Minerals Council of Australia Water Group including representatives from Newcrest, Rio Tinto, Newmont, BHP Billiton, Peabody Energy, Glencore, GDF Suez and Centennial Coal met with the OWS to discuss the Bioregional Assessment programme and to gain an understanding of how advice is requested of and provided by the IESC.
 - Representatives from APPEA and the Minerals Council of Australia were provided with an update on the research projects.
- iv. Since the April meeting nine pieces of advice prepared by the IESC (both the interim and statutory) have been published on the web.

2. Advice on Projects referred by Governments

2.1 Caroona Coal Project, NSW

The New South Wales Mining and Petroleum Gateway Panel sought the IESC's advice in relation to the Caroona Coal Project, at the gateway stage prior to the lodgement of a development application and environmental impact statement (EIS).

The proposed project is a new underground (longwall) coal mine approximately 40 kilometres south-east of Gunnedah and 14 kilometres west of Quirindi in the Namoi region of NSW. It is expected that the mine will have an operational life of 30 years and producing 10 Mtpa run-of-mine coal.

Mr McDonald did not participate in the IESC's consideration of the finalisation of the advice prepared.

Matters of interest to the IESC, noting the limited information available at the gateway stage included:

- groundwater drawdown in the target coal seams and overlying hydrological units;
- surrounding existing infrastructure and groundwater dependent ecosystems including high priority springs;
- predictions of up to 3.1 metres of subsidence above the longwall panels; and

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- groundwater modelling and potential impacts to surface water and ecological assets.

The IESC's advice will be published separately on the IESC's website, in the context of the regulator's decision.

2.2 Boundary Hill South Lease Extension, Qld

The Australian Government Department of the Environment and the Queensland Department of Environment and Heritage Protection requested the IESC's advice in relation to the Boundary Hill South Coal Mine at the assessment stage. Draft EIS documentation has been provided.

The proposed project is an expansion of the existing Callide Mine involving a new open cut coal mine pit. It is located approximately 20 kilometres north of Biloela and 85 kilometres south-west of Gladstone.

It is expected that the mine will produce 2.6 Mtpa run-of-mine coal and extend the life of the mining operations at Boundary Hill by 20 years.

Matters of interest to the IESC included:

- the conceptualisation of the hydrogeology and surface water-groundwater interactions;
- a groundwater monitoring plan identifying monitoring bores in the Precipice Sandstone and the Callide Coal Measures; and
- reduced stream flow, stream stability and the sedimentation on the downstream aquatic and terrestrial ecology.

The IESC's advice will be published separately on the IESC's website, in the context of the regulator's decision.

2.3 Washpool Coal Mine Project, Qld

The IESC was requested by the Australian Government Department of the Environment to provide advice on the Washpool Coal Mine Project in Queensland at the approval stage. Supplementary EIS documentation has been provided.

The proposed project is a new open cut coal mining operation with a coal handling preparation plant and associated road and rail infrastructure in the Bowen Basin, 260 kilometres west of Rockhampton, 60 kilometres north-east of Emerald and 24 kilometres north-west of Blackwater. It is expected that the mine will have an operational life of 15-20 years and produce 7.2 Mtpa run-of-mine coal, to produce 2.6 Mtpa hard coking coal for export.

Matters of interest to the IESC included:

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- regional conceptualisation and local geological data;
- the inputs and outputs of the site water balance including the handling, storage and ecological impacts of mine affected water and water discharges;
- the flooding and the proposed construction of a multi-purpose flood levee; and
- the connectivity and interaction of groundwater and surface water and the potential impacts on the Fitzroy River Turtle habitat.

The IESC's advice will be published separately on the IESC's website, in the context of the regulator's decision.

3. Presentation

Dr Paul Greenfield AO, Chair of the Expert Panel for Major Coal Seam Gas Projects, spoke to the IESC on the work the Expert Panel has been undertaking in relation to the four post approval process of four CSG projects in Queensland on the Water Monitoring and Management Plans, the Joint Industry Plan for an early Warning System for the monitoring and protection of EPBC Act-listed Springs, drawdown triggers and mitigation measures.

The Chair thanked Professor Greenfield for his presentation noting the areas of common interest between the work of the IESC and the Expert Panel.

4. Research

4.1 Update on Research

The IESC was updated by the OWS on the key developments of the Research Programme, including plans for publishing the six background reviews and three fact sheets.

For new research, the project scope for the faulting project was agreed with minor amendment and the vertical hydraulic conductivity project scope was tabled for further consideration.

For the IESC consideration at the June meeting, the OWS was requested to progress to the Research Sub-Committee:

- scoping for other new projects;
- approaches and priorities for new research projects; and
- a short paper outlining a framework for the proposed new projects in the hydrology theme.

The Research Sub-Committee was requested to review and provide advice on priority research in light of the recent Budget decisions.

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4.2 National Assessment of Chemicals associated with Coal Seam Gas Extraction

The IESC received a presentation from CSRIO's Rob Jeffrey on groundwater investigations associated with modelling of hydraulic fracture growth, and NICNAS's Graham Harvey on the assessment of hazards to human health associated with drilling and hydraulic fracturing chemicals.

The IESC commented on the draft papers and requested that the contextual framing of the reports be further considered and that IESC members Professor Dayanthi Nugegoda and Emeritus Professor Peter Flood be provided an opportunity to comment on the draft reports.

The IESC requested OWS to discuss the need for an independent peer review with the project partners.

5. Other Business

5.1 IESC Field Trip

IESC members agreed for a field trip to be undertaken to the Hunter Valley region in conjunction with the scheduled meeting in June. OWS will liaise with relevant state government officials regarding the identification of potential sites for visitation, arrangements and participation.

5.2 Forward Planning Agenda

The IESC considered the forward planning agenda and agreed to defer a number of items to the July meeting. This will enable the inclusion of the field trip into the scheduled June meeting days and ensure the IESC is still able to prepare its advice to regulators on project proposals.

For consideration at the July meeting, the IESC agreed to undertake a six monthly review of its activities.

5.3 Budget Outcomes

The IESC was provided with a general overview of the Federal Budget and the implications for the work of interest to the IESC.

6. Bioregional Assessments

6.1 Bioregional Assessments progress

The IESC discussed recent developments relating to the Bioregional Assessments, including:

- recent workshops regarding the Lake Eyre Basin Springs project and hazards identification;
- data acquisition; and

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- progress regarding varying contractual arrangements.

The IESC requested an update on the specific outcomes of the hazards identification workshops at a future meeting.

The IESC discussed the timeframes and risks associated with delivering innovative scientific components of the bioregional assessments. The IESC requested that a paper be brought to the July meeting outlining the Programme Board's approach, the use of the risk register and treatments for high risk activities.

Approaches for ensuring communities in bioregions are aware of bioregional assessments and its objectives were also discussed.

6.2 Presentation by Bioregional Assessment partners on Cumulative Impacts

Key issues discussed included guidance on the coal resource development pathway, methods for reducing uncertainties and sensitivity analysis on climate variability, making the bioregional assessment's adaptable for future information; and the importance of communication with stakeholders.

Close of Meeting

The Chair thanked everyone for their contribution to the meeting.

Next Meeting

The next meeting will be held over three days on 10-12 June 2014 and will be incorporated into the field trip.

The meeting closed at 4.00pm on 14 May 2014.

Minutes confirmed as true and correct:

Ms Lisa Corbyn
IESC Chair

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Attachment A

Item(s)	IESC member	Disclosure	Determination
2.1	Jim McDonald	I consider that there may be a conflict of interest in relation to agenda item 2.1 arising from <i>I and my immediate family have owned land partially covered by the BHP exploration area licence. The bulk of the land was outside and to the west of the southwest corner of the conceptual mine plan presented to the Carooona Consultative Committee in April 2004. We sold that land over 15 years ago, a portion was sold to my cousin. That portion we sold to my cousin now overlays a number of proposed underground panels in the most SW corner. Neither I, nor any member of my immediate family, have a financial interest in that land or in any of my cousins' interests. I have had no financial dealings with my cousin since that transaction.</i>	No actual, potential conflict of interest exists however to manage any perception of conflict Mr McDonald agreed not to participate in the meeting when advice on the Carooona project is finalised.
6.1, 6.2	Jane Coram	I consider that there may be a possible conflict of interest in relation to agenda item 2.1 arising from <i>Geoscience Australia's involvement in bioregional assessments and Geoscience Australia's potential interest in undertaking the research activities.</i>	No actual, potential or perceived conflict of interest exists and Jane participated fully in the IESC meeting. The reason for the decision is that the IESC is not making decisions on funding of research and therefore there is not conflict in relation to this meeting.
4	Craig Simmons	I consider that there may be a possible conflict of interest in relation to agenda item 4 (Research) arising from <i>National Centre for Groundwater Research and Training (NCGRT) being a potential provider of R&D to the IESC/OWS.</i>	No actual, potential or perceived conflict of interest exists and Craig participated fully in the IESC meeting. The reason for the decision is that the IESC is not making decisions on research funding therefore there is no conflict in relation to the meeting.