

**Independent Expert Scientific Committee on Coal Seam Gas and
Large Coal Mining Development (IESC)
Meeting 92, 12-14 December 2022**

**MINUTES
Videoconference**

ATTENDANCE AND APOLOGIES

IN ATTENDANCE

Dr Chris Pigram (Chair)

Dr Andrew Boulton

Professor Jenny Davis

Dr Jenny Stauber

Associate Professor Phil Hayes (Items 1.1-1.4, 2.1 [12 Dec 9.15am-1.20pm, 14 Dec],
2.2 [13 Dec 9.00-12.00pm, 14 Dec], 3 & 4)

Professor Rory Nathan (Items 1, 2.1 [12 Dec 9.15am-12.30 & 2.20-3.00pm, 14 Dec], 2.2, 3 & 4)

Professor Wendy Timms

APOLOGIES

Professor Craig Simmons

INVITED GUESTS

Item 3.1

Dr Luk Peeters, Principal Research Scientist, CSIRO

Hugh Middlemis, Director and Principal Groundwater Engineer, HydroGeoLogic Pty Ltd

OFFICE OF WATER SCIENCE (OWS)

Peter Baker, Director

Aimee McAllister

Andriana Stoddart

Aranza Bulnes-Beniscelli

Ben Klug

Christina Fawns

Fiona McKenzie-Smith

Frances Knight

Isabelle Francis

James Rae

Jason Smith

Katrina Bourke

Laura Richardson

Mio Kuhnen

Sarah Taylor

Note: OWS attendees include those with full or partial, and in-person or virtual, attendance.

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.

1.1 Acknowledgement of Country

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

1.2 Disclosure of Interests

Committee members were invited to make disclosures. Committee members also completed a Meeting Declaration of Interests before the meeting commenced. Details on disclosures of interests are at Attachment A.

1.3 Confirmation of Agenda

The Committee endorsed the agenda for Meeting 92.

1.4 Confirmation of Out-of-Session Decisions

The Committee noted that:

- minutes of the Committee's ninety-first meeting on 9 November 2022 were agreed out-of-session and published on 25 November 2022.

1.5 Correspondence

The Committee noted the status of correspondence to 30 November 2022.

1.6 Action Items

Ongoing items were noted and updates were provided on the timing of completion.

1.7 Forward Planning Agenda

The Committee noted the forward planning agenda.

It was agreed that the next meeting be scheduled for 31 January – 2 February 2023 in-person in Adelaide.

1.8 Environmental Scan

The OWS reported on recent events.

2. Advice on Projects referred by governments

2.1 Ashton Coal Operations Ravensworth Underground Mine

Ashton Coal Operations Pty Ltd (ACOL) is seeking to re-open and extract state-approved but unmined coal resources at the Ravensworth Underground Mine (RUM), which has been in care and maintenance since October 2014. This proposed modification (the 'project') is located approximately 17 km northwest of Singleton in the New South Wales Hunter Valley, an area of extensive current and historical open-cut and underground coal mining.

The project will involve multi-seam longwall mining, with operations covering an area of approximately 421 hectares and extending mining operations until 2032. It will extract 19.4 million tonnes (Mt) of run-of-mine coal at a rate of 7 Mt per annum (Mtpa). ACOL intends to transfer and manage the extracted coal, water and gas at the Ashton Coal Project (ACP), adjacent to the project. This will involve the use of existing infrastructure at the RUM such as shafts, bores, pumps and pipelines.

The IESC considers that the proposal documentation is inadequate as it is largely limited to the difference in impacts associated with the mine layout that was approved for the RUM in 1996. It does not provide sufficient evidence or detail to reliably evaluate the quality of the work or to provide confidence in the conclusions drawn about the potential impacts of the project. From the limited information provided, key potential impacts are:

- groundwater drawdown, contributing to cumulative drawdown in the region that may adversely affect groundwater-dependent ecosystems (GDEs);

- altered surface-water hydrology due to subsidence up to 5.9 m and cracking potentially greater than 1 m predicted above the mining area. The use of multi-seam mining and the presence of overlying backfill is likely to contribute to a high degree of localised variability across the site; and
- further decreases in groundwater and surface water quality should there be subsidence-induced seepage or embankment failure associated with the onsite storage dams.

The IESC has identified several areas in which additional documentation and work is required to address the key potential impacts, as detailed in this advice. These are summarised below.

- Further evaluation is needed on potential impacts on runoff, recharge and flooding processes associated with altered surface water-groundwater connectivity pathways from subsidence associated with the project.
- To increase confidence in the groundwater model, further work is required which should include, at a minimum, a revised model boundary, clarity on boundary conditions and hydrogeological data used in the model, greater detail on the incorporation of historical and approved future mining projects and a sensitivity and uncertainty analysis.
- Information on the water and sediment quality of the onsite storage dams is required to help inform an analysis of the potential impacts of potential leaks and spills from these dams.
- The proponent should provide an ecohydrological conceptual model that illustrates likely impact pathways and ecological responses, focussing on potential cumulative changes to groundwater quantity and quality and surface flows in the project area and downstream.
- More detailed Trigger Action Response Plans (TARPs) are needed, including specific remedial actions for dieback of riparian vegetation in response to altered groundwater levels or quality, in addition to an early warning management system for the management of subsidence-related impacts.

Consistent with the *Environment Protection and Biodiversity Conservation Regulations 2000*, advice will be published on the IESC's website within 10 business days of being provided to the regulators.

2.2 Moorlands Open Cut Coal Mining Project

The Moorlands Open Cut Coal Mine Project ('the project') is a proposed new thermal-coal mine located in the Moorlands Basin approximately 25 km northwest of Clermont in Central Queensland. The project will extract approximately 1.9 million tonnes of run-of-mine coal annually for 30 years. Mining will progress simultaneously from the northern and southern extents of the pit, leaving a void lake in the central area.

The project is located mainly within the headwaters of the Belyando-Suttor Catchment and proposes to harvest water by constructing two weirs on Miclere and Western creeks. Tributaries of Brigalow Creek will be diverted around the mine.

The project will require construction of mine infrastructure, including a coal handling and preparation plant (CHPP), a co-disposal dam for fine and coarse rejects from the CHPP, a water management system, the water harvesting system, waste dumps and road corridors. The project may also require construction of train-loading facilities.

The IESC considers that the data provided on groundwater, surface water, sediments, groundwater-dependent ecosystems (GDEs) and other aquatic ecosystems are wholly inadequate. Most field data were collected in 2013 and are insufficient to provide a robust baseline against which to judge potential impacts.

Key potential impacts from this project are:

- groundwater drawdown from mining operations which may impact GDEs;
- loss of approximately 5 km of ephemeral-stream channels due to the proposed diversion which will affect riparian connectivity and instream ecological processes;
- changes to surface water flow regimes from the proposed diversion of Brigalow Creek and from two weirs built for water harvesting. These changes may impact aquatic biota and ecological processes, riparian vegetation and associated wildlife, and alluvial aquifers;

- changes to surface water quality and possibly alluvial groundwater quality from discharges of untreated mine-affected water (MAW); and
- legacy effects of a permanent saline void lake.

Due to the very limited baseline data (mostly collected in 2013), the IESC identified substantial additional work to provide sufficient context, to inform modelling, and to address the key potential impacts.

- Additional, up-to-date baseline data must be collected. This includes at least two years' sampling of groundwater, surface water, sediments, aquatic and riparian biota, and GDEs (including stygofauna).
- Once these baseline data have been collected, the proponent will need to use them to:
 - update the description of the project area and redevelop conceptualisation of ground and surface water systems, including interpretation of field tests and time-series data;
 - update the groundwater modelling and uncertainty analyses;
 - develop an ecohydrological conceptual model to guide identification of potential impact pathways and quantify the likely local and regional extents of the project's impacts on water resources and water-dependent assets; and
 - update the void modelling using the results of post-mining groundwater modelling and surface water modelling, and consider climate-change impacts during the post-mining period.
- The proponent will then need to develop the Receiving Environment Management Plan, surface water and groundwater management plans, a GDE management plan, and a rehabilitation and void management plan using the baseline data and modelling updates outlined above. These plans should incorporate Trigger Action Response Plans that provide clear linkages between monitoring, mitigation and management actions allowing timely responses and actions to prevent or rectify impacts.

Consistent with the *Environment Protection and Biodiversity Conservation Regulations 2000*, advice will be published on the IESC's website within 10 business days of being provided to the regulators.

3. Other business

3.1 Uncertainty Analysis Explanatory Note

Dr Luk Peeters and Mr Hugh Middlemis presented on comments received from public consultation on the draft of the updated *Uncertainty Analysis for Groundwater Models* Explanatory Note.

3.2 Presentation on Carbon Capture and Storage: Deep Well Sequestration

IESC members Professor Wendy Timms and Associate Professor Phil Hayes presented on carbon capture and storage (CCS), and specifically deep-well sequestration, with an overview of CCS injection targets, CO2 trapping, leakage, storage accreditation, risks and monitoring.

4. Close of Meeting

The meeting closed at 3.05 pm on Wednesday 14 December 2022.

Next Meeting

The next meeting is scheduled for 31 January – 2 February 2023 in Adelaide.

Minutes confirmed as true and correct:

Dr Chris Pigram AM, FTSE

IESC Chair

21 December 2022

Attachment A

Item(s)	IESC Member	Disclosure	Determination
2.1	Associate Professor Phil Hayes	I consider that there may be a possible conflict of interest in relation to agenda item Ashton Coal Operations Ravensworth Underground Mine (EPBC 2022/09208), as follows: Ravensworth Underground is operated by Glencore; In my role at The University of Queensland in 2020/21, my research group completed work with CTSCo, also owned by Glencore.	It was determined that no actual, potential or perceived conflict of interest exists and Associate Professor Phil Hayes can participate fully with the Committee on the Ashton Coal Operations Ravensworth Underground Mine (EPBC 2022/09208). The basis for the determination is that there is enough separation between his research work and the Ashton project.