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Committee Secretary
Senate Standing Committee on Environment, Communications and the Arts

Email: eca.sen@aph.gov.au

Dear Sir/Madam

Inquiry into the impacts of mining in the Murray Darling Basin

APPEA welcomes this opportunity to provide information on the potential impacts of mining in the Murray Darling Basin (MDB).

APPEA's submission corresponds to the Terms of Reference for this inquiry as follows:

- the potential impacts of current and projected mining operations on all environmental values in the Murray-Darling Basin and, in particular, the potential impacts upon surficial and groundwater flows and quality in the alluvial flood plains at its headwaters in the Namoi Valley and the Darling Downs catchments; and
- evaluation of the potential impacts in the context of the Murray-Darling Plan and agricultural productivity.

Generally, APPEA has focused this submission on the emerging coal-seam gas industry in Queensland and New South Wales.

Industry Background

In Queensland and New South Wales, APPEA's membership includes the large, medium and small companies with exploration and production interests in oil, condensate, liquefied petroleum gas, conventional gas, coal seam gas (CSG) and proposed liquefied natural gas (LNG) developments.

Queensland and New South Wales have enormous quantities of natural gas in the form of extensive CSG deposits and the vast potential of these resources is beginning to be realised. The industry is involved in exploration and development activities in most parts of Queensland with a particular focus on the Cooper-Eromanga, Bowen and Surat Basins of south-western and eastern Queensland.

CSG was first produced in Queensland in 1998 and since then 3P CSG reserves have grown to over 40,000 petajoules (PJ), with significant additions coming at regular intervals. CSIRO has estimated the ultimate potential of the CSG resource in Eastern Australia to be approximately 250,000 PJ – equivalent to over 250 years potential east coast demand. As a result, there are several proposals for increased domestic supply and LNG export projects in the planning stages.

New South Wales geology is more challenging than in Queensland but CSG activity is increasing rapidly. There has been a marked increase in investment in New South Wales acreage in recent years with the Clarence-Moreton, Gunnedah and Gloucester basins in New South Wales considered to be emerging production areas. Recoverable reserves in New South Wales are estimated to total 19,000 PJ[1].

APPEA Code of Environmental Practice

The Australian oil and gas industry has operated in onshore and offshore jurisdictions for over 100 years. In this time, the industry has developed a reputation for operations that are low impact and environmentally sound. The industry adopted its first Code of Environmental Practice[2] in 1977.

The code has served two very important roles. Firstly, in providing guidance for companies in managing environmental performance; and secondly, in sending a clear message to stakeholders about the industry's commitment to environmental performance.

There are a number of key areas of emphasis in the code, including:

- planning;
- continuously assessing risks and practicable opportunities to improve performance outcomes;
- early, fit for purpose consultation in accordance with the Ministerial Council for Mineral and Petroleum Resources Principles for Community Engagement;
- greenhouse considerations;
- biosecurity management; and
- decommissioning.

Water management issues

Water produced in the CSG process comes from coal seams, not surface waters (creeks and rivers) or aquifers.

In coal seams the gas is adsorbed (held) to the coal and produced water is contained within the coal cleats (gaps). Gas production is initiated by lowering the water pressure in the coal seam. This is usually achieved by pumping off the water contained in the cleats. Water production decreases as gas production increases over time.

Figures 1 and 2 below illustrate the CSG extraction process and show and illustrative production profile for water and gas.

[1] New South Wales Department of Primary Industries
[2] APPEA Code of Environmental Practice, October 2008

Figure 1[3]: Production scheme of Gas

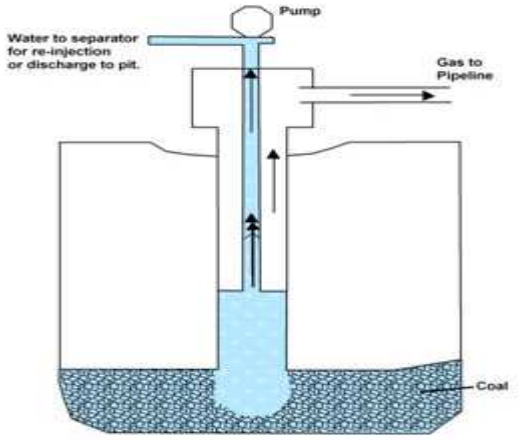
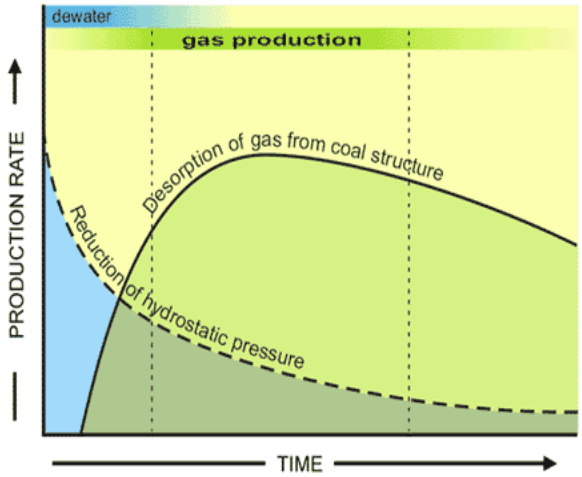


Figure 2[4]: Generalised Production Profile and Water for a Coal Seam Methane Well



The Queensland CSG industry is forecast to extract 100-300 GL of water per year from within coal seams at its peak though the actual amount will depend on the level of gas exports[5]. As a comparison, extractions from the MDB surface waters average approximately 11,000 GL/yr.

APPEA acknowledges that the water management issues involved with CSG extraction will impact some regional areas of the MDB more than others. The CSG industry has been investigating the potential for the water it extracts to be used in a number of beneficial ways, including for agricultural purposes, urban supplies, reinjection to appropriate aquifers and discharge into the creeks and rivers of the MDB.

CSG operations are regulated under petroleum legislation by the government departments responsible for resources in New South Wales and Queensland. CSG water is regulated by the government department responsible for environmental regulation. A licence is granted under each jurisdiction that allows authorised activities and imposes conditions on those activities to minimise impacts to the environment and community.

The proposed CSG to LNG export projects are the subject of Environmental Impact Assessments under the *State Development and Public Works Act 1971* (Qld). At an administrative level, an EIS provides the 'umbrella' for the application of the full suite of planning, environmental, technical and other approvals/permits that are considered within a coordinated intra-Governmental process including the Australian Government's Department of the Environment, Water, Heritage and the Arts.

The EIS process requires project proponents to undertake numerous studies to quantify their environmental and other impacts. In relation to water, CSG proponents are being required to model the impacts of their water extraction upon groundwater. Subject to the outcome of these studies, the State Government can consider the need for mitigation of any potential impacts.

In addition, the *Petroleum and Gas (Production and Safety) Act 2004* (Qld) imposes "make good" provisions upon CSG producers where water extraction is found to have an impact upon local bore water levels.

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[3] Icon Energy Limited, *Coal Seam Methane or Coal Seam Gas*, Articles.
[4] Emeabba Gas Limited, *Coal Seam Methane*.
[5] Queensland Department of Employment, Economic Development and Innovation, *Blueprint for Queensland's LNG Industry*

Land management issues

The CSG industry co-exists with the agricultural industry and there are strict requirements upon CSG producers under the Queensland's *Petroleum and Gas (Production and Safety) Act 2004* and similarly under the New South Wales's *Petroleum (Onshore) Act 1991*, regulating the process for accessing land and providing appropriate compensation.

In Queensland, APPEA is a member of the State Government's Land Access Working Group charged with developing a Land Access Strategy. The industry strongly supports reasonable conduct and compensation requirements, and many cooperative agreements have already been established with landholders that demonstrate the mutual benefits that can flow to both parties through the gas field development process.

The footprint of the CSG operations may appear quite large when looking at the petroleum lease areas, which are estimated to be in the order of 1 million hectares in Queensland with a smaller acreage in New South Wales. However, the actual footprint of the land that undergoes a permanent change of use is anticipated to be about 1-2 per cent of the acreage.

Despite the relatively small impact on water and agriculture in the context of the total MDB, the impacts at a local level can be significant and the community awareness and sensitivity, high. The CSG industry takes these issues very seriously and has commissioned a number of studies as part of the EIS processes underway. The findings of these studies will inform companies, the public and government about the impacts of the CSG activities and allow companies to work with government and the community to plan projects in a way that mitigates impacts and create beneficial outcomes.

In summary, the petroleum industry has a proven track record of successfully coexisting with other land uses, building constructive relationships with land holders, and meeting high environmental standards. We have every expectation that this will continue to be the case.

APPEA would welcome the opportunity to appear before the Committee to provide further detail on these issues. We are also aware that some of our member companies are making submissions to the Inquiry and we commend these to you.

Yours sincerely

Matthew Paull
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