

**Submission
No 254**

INQUIRY INTO COAL SEAM GAS

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Organisation: Hunter-Central Rivers Catchment Management Authority
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The Hon Robert Brown MLC
General Purpose Standing Committee No. 5
Legislative Council
Parliament House
Macquarie Street
SYDNEY NSW 2000

Our Ref: A618254

Dear Mr Brown

Subject: Coal Gas Seam Inquiry

I refer to your letter inviting submissions on the above Inquiry. The Hunter-Central Rivers Catchment Management Authority (CMA) provides the following comments for consideration by the Committee.

Hunter-Central Rivers Catchment Action Plan (CAP)

The Hunter-Central Rivers CAP is a whole-of government approach to natural resource management which has been endorsed by the NSW Government. The comments below are provided in the context of the impact of coal seam gas extraction on the CAP which is available on the CMA's website <http://www.hcr.cma.nsw.gov.au>

The targets and guiding principles within the CAP outline the CMA's position on how natural resources should be managed in the Hunter-Central Rivers region. They provide direction for all natural resource managers to achieve ecologically sustainable development and allow organisations to align their activities so that they are compatible with the CAP. This will ensure that the whole community (including government) can work towards a common goal.

Attached to this letter is a copy of the two most significant Guiding Principles relevant to coal seam gas extraction – groundwater and mining (Attachment 1). The CMA recommends these be considered in the Inquiry.

Key Concerns

Whilst the CAP covers environmental impacts associated with most forms of development, coal seam gas (CSG) extraction is a relatively new industry which was not addressed specifically in the CAP. The CMA has the following additional specific concerns regarding CSG activities.

1. Environmental Impacts

a. Groundwater and Surface Water Systems

- The groundwater systems in the Hunter – Central Rivers (and in particular the Upper Hunter) are not fully understood, there are numerous local groundwater systems which may (or may not) interact with regional systems, and some which certainly do interact with surface water systems. Alluvial aquifers throughout the region are already under stress. Further impacts from CSG drilling activities (which may be centered 1 – 1.5km distant) are possible and need to be avoided.
- Any coal seam proposed for gas extraction would have to be individually studied for connectivity, hydrology and fragility to ensure no risk exists to groundwater quality or quantity.

- In addition to detailed investigation of each coal seam, any CSG exploration and extraction must assess the cumulative impact on water systems and the environment. This should also include a full assessment of the current trends, status and resilience of ground water ecosystems and aquifers. A regional groundwater plan for the Hunter needs to be prepared to identify aquifers at risk and the potential cumulative impact of proposed mining and coal seam gas activities.
- Repressurisation of "non-watertight" seams has been proposed in some areas as a solution to protect connected aquifers or groundwater systems. However, this process needs much more investigation and proof of concept before it is used to justify CSG extraction in any connected system.
- Studies on cumulative impacts on water resources and technical reports on mining alluvials and associated cracking have been prepared by NSW government departments and should be included in the inquiry.
- Release of post-well water to the surface water systems has the potential to negatively impact water quality, and if excessive in the quantity released, may interrupt natural seasonal flow patterns with unknown impacts on aquatic biodiversity, bed/bank stability, etc.
- The high salinity associated with coal water must be addressed in any coal seam gas process. It is not appropriate to irrigate with this water or discharge it to surface water systems, including ephemeral streams that provide critical drought refuge pools for biodiversity. The Hunter catchment has a salinity trading scheme which operates very effectively but is unlikely to be able to accommodate the levels of salt from extensive CSG development.

b. Use of Chemicals

- Chemical use as part of the CSG exploitation process has many unknown risks and consequences. The use of chemicals in any way that may potentially enter ground or surface water is an unacceptable risk and should not be allowed.
- If the primary aim for the use of chemicals as part of the fracturing process is to enable the extraction of CSG from "tight" seams, then efforts in exploration and extraction should be focused on coal seams which more readily yield gas. That is, extraction should be prohibited from those seams where use of chemicals is necessary.

c. Hydraulic Fracturing

- Fracturing coal seams in itself (without the use of chemicals, using only water/sand) appears to have significant potential impacts on groundwater and aquifers. Any seam whose structural integrity is compromised has a greater likelihood of failure in terms of pressure and connectivity to other ground water systems.

d. Crown Lands

- Travelling Stock Reserves are often targeted for placement of infrastructure (especially linear infrastructure such as pipelines), along with State Forests. These areas often contain native vegetation of State or regional conservation significance, and provide critical habitat and corridors in overcleared landscapes. They should be valued for these attributes above others, with alternate locations for infrastructure used that prevent loss of native vegetation or decline in its condition.
- Greater consideration needs to be given to the preventing loss of endangered ecological communities – it is not appropriate to clear these communities as they are unable to be adequately offset.
- CSG proposals that involve native vegetation clearing should only proceed where it is demonstrated that environmental outcomes are improved or maintained. Where loss of native vegetation is unavoidable, appropriate offsets determined through a Government endorsed methodology such as Biobanking, must be provided.

e. Remediation

- Infrastructure establishment (pipelines, pumping and collection stations, etc) will have a negative cumulative impact on the environment. The current proposal for Eastern Star Gas pipeline, for example, proposes to cross several dozen waterways of stream order 3 and above, and proposes to traverse some of the soils in the Hunter with the highest erosion hazards (sodic, dispersible and some moderate-highly saline). It has not been demonstrated that long term remediation and maintenance of these stream crossings, large linear disturbances of sensitive soils or native vegetation prone to weed invasion will be able to be achieved satisfactorily.
- The fragmentation and interruptions of corridors caused by infrastructure must be assessed at a strategic level, taking into account the cumulative impact on ecosystem services and resilience of landscapes.

f. Greenhouse Gas and Other Emissions

- Whilst the use of gas as a fossil fuel is generally accepted to be cleaner than coal, it is important to explore the extraction process and make an account of the full suite of emissions CSG extraction can produce. For example, CSG can be variable in quality containing carbon dioxide and other gases which may need to be removed before use.

2. Economic and Social Implications

- Any assessment of the social and economic implications for CSG must give equal weighting to all environmental, social and economic aspects. Environmental services and social values (lost or gained) need to be accounted for over the very long term or at least as long as the impact of mining lasts, for example, up to 200 years for some water tables to rebound.
- A benefit cost analysis must include a true and accurate analysis associated with CSG extraction. This involves assessing costs associated with; long term (or irreversible) loss of native vegetation (including EECs), loss of ecosystem services such as wildlife corridors which affects pollinators and biodiversity movement, loss of amenity, loss of small rural communities, loss of access to surface and groundwater and loss of ground water dependant ecosystems. The potential future land use also needs to be considered, that is what is the value of alternative land use such as agriculture, recreation or even housing.
- Economic evaluations should include the potential for the increased extraction of CSG to create "boom-bust" or "two speed" economies and regional housing impacts.

3. Future Energy Needs

- It is often assumed that NSW will increase supply of fuel resources (coal and gas) to meet growing global demand. This assumption has not been fully examined or justified. An assessment of optimum production to meet domestic resource needs, support long term employment, while remaining within acceptable environmental thresholds versus maximum exploitation to meet offshore demand in the short term should be undertaken.

4. The interaction of the Act with other legislation and regulations

- The CMA would like to see greater resources being directed towards monitoring consent condition compliance, increasing penalties for breaches and less reliance on self monitoring.

If you require any further information please do not hesitate to contact Glenn Lyons

Yours sincerely

Fiona Marshall
General Manager

7 September 2011