

Submission
No 252

INQUIRY INTO COAL SEAM GAS

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Hawkesbury-Nepean Catchment Management Authority

Hon Robert Brown MLC
General Purpose Standing Committee No:5
Parliament House
Macquarie St
SYDNEY NSW 200

30 August 2011

Dear Mr Brown

Subject Coal Seam Gas Inquiry

The Hawkesbury-Nepean Catchment Management Authority (HNCMA) acknowledges the opportunity to make this submission to the Coal Seam Gas (CSG) Inquiry.

Hawkesbury Nepean Catchment Management Authority

The HNCMA works to protect the natural values of the Hawkesbury-Nepean through strategic planning, partnerships and funding for natural resource management projects on public and private land.

Our work involves close partnerships with state agencies, local government, landcare, bushcare, Aboriginal groups, landholders, primary producers, environmental and industry groups, the catchment community, local businesses and the corporate sector.

Hawkesbury Nepean Catchment Management Authority:

- Is one of several state and local government agencies working to improve the catchment. However it is the only regional body focused on the health of the whole Hawkesbury-Nepean catchment.
- Has specific responsibilities in relation to the management of water and vegetation, including facilitating the community consultation components for the Greater Metropolitan Regional Surface Water and Groundwater Sharing Plans and regulatory functions in relation to the Native Vegetation Act 2003.
- Is mainly concerned with the potential environmental impacts and possible associated landuse changes associated with coal seam gas exploration and extraction.

Background to the catchment:

The Hawkesbury-Nepean Catchment is a significant catchment in NSW supplying vital drinking water to over 4 million people, 12% of NSW's agricultural production, a significant proportion of which feeds people within the Sydney Basin. The catchment contains the majority of the Blue Mountains World Heritage Area including 288 threatened species and 33 endangered ecological communities.

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The Catchment is an important source of coal, containing significant areas of the western and southern coalfield areas and supporting the production of one fifth of the State's electricity production.

The Hawkesbury-Nepean Catchment has been the subject of a number of inquiries in regard to cracking of river beds in relation to long wall mining. It contains the Camden Gas Project which produces approximately 6% of NSW gas supply. The HNCMA is acutely aware of the risks associated with these activities and has adopted *Principles for managing mining impacts* which also stress the importance of applying the precautionary principle to mining activities (refer attachment).

The HNCMA is strongly of the opinion that the precautionary approach urged by the National Water Commission (NWC) 'Coal Seam Gas and Water' position statement (December 2010) be adopted in relation to all activities associated with Coal Seam Gas (CSG) exploration and extraction. The HNCMA supports the 'Principles for managing CSG and water' detailed within the NWC paper.

Previous attempts at managing adverse impacts associated with coal seam gas interference clearly demonstrate that these activities cannot be undertaken without significant interference and damage to groundwater and surface water. In addition there is increased risk where there is limited accurate information on the continuity of the coal seam, the continuity of roof and floor rock and potential relationships between overlying aquifers in the catchment.

Recent exploration for CSG in the Hawkesbury-Nepean has created significant community concern, including in relation to exploration adjacent to and in the restricted areas controlled by Sydney Catchment Authority (SCA), the Putty Valley and in the southern highlands.

Terms of Reference- inquiry into Coal Seam Gas

HNCMA would like to make specific comment on the following areas of the Terms of Reference

- 1: The environmental and health impact of CSG activities including the:
 - a: Effect on ground and surface water systems
 - b: Effects in relation to the use of chemicals
 - c: Effects relating to hydraulic fracturing
 - e: Nature and effectiveness of remediation required under the Act
- 2: b: Food security and agricultural activity

1a: Effect on ground and surface water systems (without fraccing)

Quantity:

- Reduction in yields – surface and groundwater

Extraction of coal seam gas requires depressurising the coal seam to enable release of the gas trapped within the coal. This usually involves removal of significant quantities of water, (CSG formation water). This directly affects the amount of water in the coal seam aquifer and it may also encourage drainage from other aquifers. Subsequent draining can have serious and permanent impacts on surface and groundwater yields and on groundwater dependent ecosystems (GDEs).

The potential for aquifer interference to reduce the amount of water available for allocation under the Greater Metropolitan Regional Water Sharing Plan (Surface and Groundwater) 2011 must be considered. The only water currently unallocated for either surface water or groundwater lies in limited groundwater sources. Increased aquifer interference and potential seepage could add to the risk of security of supply which could adversely affect agricultural production in the region and affect the security of drinking water supplies.

- Alterations to natural flow in streams and rivers

The discharge of significant volumes of CSG formation water has the potential to alter natural flow patterns in streams and rivers, adversely impacting instream and riparian condition and affecting wetland health

- Quality of surface waters

CSG formation water is typically saline and/or sodic and often contains a range of organic compounds of concern to human health. Coal bed dewatering and associated surface water discharge has the potential to pollute surface waters impacting on the quality of surface water available for agriculture and in-stream water quality. The cumulative impacts of any potential discharge to surface waters must be assessed.

1b: Effects in relation to the use of chemicals

There has been significant community concern about the use of chemicals associated with hydraulic fracturing or "fracking". Concerns have focussed on the use of BTEX chemicals, benzene, toluene, ethylbenzene and xylene. A precautionary approach should be taken in regard to all chemicals used in fracking given that the contained nature of aquifers poses long term risks from even minor contamination. As BTEX chemicals naturally occur in coal seams, it is possible that levels will increase during normal extraction operations. Comprehensive risk assessments, baseline and stringent monitoring must be in place (with or without fracking), including of adjacent aquifers, to ensure protection of water quality. Given the intervals of time associated with aquifer recharge, monitoring must continue for many years beyond the period of active operation.

1c: Effects relating to hydraulic fracturing

- Quantity

In addition to dewatering of the coal seam bed, inadvertent fracturing of normally impermeable rock layers can cause unanticipated draining of overlying and underlying aquifers. This can have serious and permanent impacts on groundwater (and associated surface water) yields affecting supply and impacting on groundwater dependent ecosystems (GDEs)

The potential for aquifer interference to reduce the amount of water available for allocation under the Greater Metropolitan Regional Water Sharing Plan (Surface and Groundwater) 2011 must be considered. The only water currently unallocated for either surface water or groundwater lies in limited groundwater sources. Increased aquifer interference and potential seepage could add to the risk of security of supply which could adversely affect agricultural production in the region.

- Quality

Impacts on water quality include the potential contamination of adjacent better quality aquifers from naturally occurring contaminants associated with coal bed aquifers including salt and sodium concentrations, hydrocarbons and heavy metals. This has the capacity to impact on adjacent aquifers which support agricultural and drinking water. Possible impacts on surface water exist from both groundwater contamination and surface water discharges associated with coal bed dewatering.

1e: Nature and effectiveness of remediation required under the Act

No viable methods of repair of cracking and other damage to aquifers and surface water bodies have or can be demonstrated. Acknowledgement of impacts that cannot be remediated is essential and must be fully assessed and publicly communicated.

2b: Food security and agricultural activity

The Hawkesbury Nepean Catchment produces approximately 12% of NSW's agricultural production, a significant proportion of which feeds people within the Sydney Basin. Maintaining

the quality and quantity of the water resources available for agriculture in the catchment is essential for the viability of this industry.

In addition to the issues and concerns raised above there is the potential for CSG extraction to have direct land use impacts including:

- Loss of agricultural land through construction activities such as bore holes, wells and pipelines.
- Subsidence associated with depressurizing aquifers
- Cumulative impacts on soil associated with alterations to water quality including increasing salinity and erosion.

The potential of CSG extraction to impact on current landuse practices is a key risk identified by the NWC.

A precautionary approach also requires consideration of changes to historic rainfall patterns associated with climate change. This requires increased protection of the availability of clean water sources for agricultural production. Groundwater will be an increasingly important resource under these circumstances.

Unless proponents can demonstrate how detrimental impacts on groundwater and surface water quality and quantity can be avoided, no further approvals for CSG exploration or extraction should be granted in the catchment.

The HNCMA appreciates the opportunity to provide input to the Inquiry.

Yours sincerely

John Verhoeven
Acting Chair