

**Submission  
No 361**

## **INQUIRY INTO COAL SEAM GAS**

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I N L A N D  
R I V E R S  
N E T W O R K

Submission to the

NSW Legislative Council  
General Purpose Standing Committee No.5

*Inquiry into Coal Seam Gas*

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## About Inland Rivers Network

The Inland Rivers Network (IRN)<sup>1</sup> is a coalition of environment groups and individuals concerned about the degradation of the rivers, wetlands and groundwaters of the Murray-Darling Basin. IRN has been advocating for the health of rivers, wetlands and groundwater within the Murray-Darling Basin since 1991.

Member groups of IRN include: the Australian Conservation Foundation; the Nature Conservation Council of NSW; the National Parks Association of NSW; the Central West Environment Council; Friends of the Earth; The Wilderness Society, Sydney Branch and the Coast and Wetlands Society.

## Introduction

IRN welcomes the opportunity to provide a submission to the NSW Legislative Council's General Purpose Standing Committee Inquiry into Coal Seam Gas.

IRN is particularly concerned with the potential impacts from coal seam gas exploration, drilling and mining activities on hydrological systems which are mostly already highly overextracted, degraded or under significant stress from other activities.

IRN believes that coal seam gas activities pose a serious threat to water resources within NSW and as such, this submission focuses on the Terms of Reference which relate specifically to these areas.

## Key points

IRN submits that:

- In accordance with a precautionary approach, until the environmental, social and health impacts of coal seam gas drilling have been rigorously and independently assessed there should be a full moratorium on coal seam gas exploration and mining activities.
- Due to the risks associated with these activities, coal seam gas exploration and mining should be made subject to all relevant environmental legislation, including water management and native vegetation legislation.
- In order to enforce these environmental laws, the community should have full legal rights to challenge coal seam gas operations and thus be afforded legal standing under the relevant legislation.
- There should be an immediate prohibition on coal seam gas exploration and mining in important bushland, valuable farmland, groundwater aquifers and public lands.
- It should be a requirement that all chemicals used in coal seam gas drilling or fracking must be assessed by the chemical regulator for use for that purpose before being approved for use.

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<sup>1</sup> For more information see website at [www.irnsw.org.au](http://www.irnsw.org.au)

## Response to Inquiry Terms of Reference:

### 1. The environmental and health impact of CSG activities.

#### a. Effect on ground and surface water systems,

IRN believes that coal seam gas (CSG) exploration and mining poses a serious threat to surface water and groundwater systems in a number of ways relating to effects on both water quality and quantity. Particular concern is focused around;

- The potential for drawdown and contamination of groundwater aquifers, including the risk of major cumulative impacts on the Great Artesian Basin.
- The pollution of surface water systems from 'water' water, leading to serious reductions in water quality.
- The use of large volumes of water for drilling and fracking in water systems that are already overallocated.
- The location of CSG wells on sensitive water catchments and floodplains.

#### *Water extraction*

As mentioned above, coal seam gas mining operations (drilling and fracking) are dependent upon the use of large volumes of water. Groundwater resources and the surface water sources to which they are linked in many parts of NSW, such as within the Murray-Darling Basin, are already hugely overallocated and overextracted and highly degraded. Extraction of large volumes of water to facilitate coal seam gas activities is highly questionable given that major reforms to reduce water extraction in order to improve long term security to communities and productivity through restoration of the health of river and wetlands. Coal seam gas extraction should not be permitted to take precedence over water allocations for environmental requirements or for food production.

#### *Waste water*

CSG extraction activities result in the production of substantial volumes of waste that present a serious environmental risk. The drilling fluids and highly concentrated brine from treatment of water groundwater, are extremely difficult to manage and dispose of. There is potential for environmental degradation from storage, leakage, spillage and discharge of these waste by-products occurs. Evaporation ponds are not a disposal option nor do they provide a safe storage place for waste water, as has been demonstrated through CSG operations in the Pilliga.<sup>2</sup>

#### *Groundwater*

Particularly with relation to groundwater systems, IRN urges the application of the principles of Ecologically Sustainable Development, particularly the precautionary principle. Connectivity between surface water and groundwater systems and aquifers are incredibly complex and much scientific research remains to be done to understand fully their relationship. IRN calls for the

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<sup>2</sup>Leakage of concentrated waste water into local waterway. Moran,C. & Vink,S. (2010) Assessment of impacts of the proposed coal seam gas operations on surface and groundwater systems in the Murray-Darling Basin. University of Queensland.

application of the precautionary approach to activities such as coal seam gas extraction which could have profound impacts on these highly complex systems.

The National Water Commission (NWC) has recently made statements about the potential impacts on water resources from the CSG activities and has also pointed to the need for a stringent application of a precautionary approach due to the lack of knowledge surrounding the extraction of large quantities of groundwater.<sup>3</sup>

**b. Effects related to the use of chemicals,**

IRN is very concerned about the chemicals which may be used in CSG extraction practices due to the potential environmental and human health impacts resulting from chemical contamination of water resources.

It should be a requirement that all chemicals used in coal seam gas drilling or fracking be assessed by the chemical regulator for use for that purpose before being approved for use. IRN believes that all drilling fluids should be declared, and assessed by the National Industrial Chemical Notification and Assessment Scheme (NICNAS).

The individual and cumulative impacts of drilling fluids deposited in the groundwater associated any CSG well is cause for concern and must be assessed prior to any such CSG activity.

**c. Effects related to hydraulic fracturing,**

As discussed above, IRN has serious reservations about the use of drilling fluids and chemicals and the associated waste products resulting from the hydraulic fracturing process as part of CSG extraction.

There is further concern related to the land surface and subsurface subsidence that may occur as a result of the hydraulic fracturing process. The depth of the coal seam and the geology of the overlay can determine the extent of such subsidence – this must therefore be assessed for each well, and cumulatively, prior to fracturing and stringently regulated in order to prevent further damage to surface water and aquifers in particular.

**d. Effect on Crown Lands including travelling stock routes and State forests,**

IRN has serious concerns about the major threats posed by CSG mining and exploration to natural areas, including Crown Lands, travelling stock routes and State forests, and those that have been reserved for conservation purposes.

The extensive clearing involved with CSG activities, both at the exploratory and mining states, result in further fragmentation of native bushland habitat and the activities can lead to a significantly increased risk of catastrophic bushfires.

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<sup>3</sup> National Water Commission (2010) at <http://www.nwc.gov.au/www/html/2959-coal-seam-gas.asp?intSiteID=1>



IRN is particularly concerned about the threat posed by CSG activities to inland wetland systems, even those that are located some distance away from direct CSG operations, but due to their hydrological connection could be drastically impacted upon. The potential impacts upon groundwater dependent ecosystems from CSG are deeply concerning.

Travelling stock routes are places that often exist as the major vegetation remnants, refuges and corridors across the state. As many of these areas are also located alongside river channels, they often include adjacent lagoon and wetland systems – any CSG activity in these areas would therefore have the potential to further degrade riparian areas and what is left of our remaining floodplain wetlands.

IRN notes that many recent additions to the national reserve network within NSW have been parcels of land which have been acquired due to their wetland habitat values - the value of many sites such as this could be eroded, directly through allowing the development of the CSG industry in protected areas and public lands and indirectly, through the hydrological connections between these systems.

CSG extraction should not be permitted on public land that is designated for other specific purposes, (particularly environmental purposes,) such as National Parks, conservation areas, State forests, stock routes and bushland refuges and corridors. CSG extraction activities denigrate the ecological value of such areas and interfere with native vegetation and fauna. CSG extraction activities are completely incompatible with environmental conservation.

#### **e. Nature and effectiveness of remediation required under the Act,**

The failure of remediation, even after the exploratory phase of CSG activities, is another major environmental problem related to CSG mining that has been demonstrated. Proven, adequate and enforceable remediation requirements should form a substantial component of any legislation governing CSG activities.

In order for any effective remediation to occur, it is essential that extensive and comprehensive pre-exploration data be independently collected and assessed for all proposed exploration sites. Extensive, effective and transparent monitoring and reporting would be required during any exploration and extraction activities with clearly defined quantitative performance indicator targets and clearly defined triggers.

In relation to aquifer recharge, research estimates that it may take decades to centuries for recovery of depleted aquifer pressures and levels. Once again, IRN urges the application of a precautionary approach in this context – and stresses the point that remediation works are unable to return environs to their undisturbed state

## **2. The economic and social implications of CSG activities.**

### **b. Food security and agricultural activity,**

As discussed, water needed to meet environmental water requirements and agricultural requirements for food production should not be further compromised by additional pressure from the CSG industry. With surface water (which also provides recharge for connected

groundwater systems) availability expected to be further reduced due to climate change over the coming years – development and expansion of an industry with such high water extraction demands and potential hydrological impacts should be not consistent with ecologically sustainable development.

**c. Regional development, investment and employment, and State competitiveness,**

A sustainable future for regional communities in NSW is highly dependent upon healthy natural environments and hydrological systems. With the significant risks posed to hydrological systems and the natural environment from CSG activities any financial benefits must be assessed to take account of this and against the damage to agricultural land, food production, soil, water and air quality recreational environment and human health.

**4. The interaction of the Act with other legislation and regulations, including the Land Acquisition (Just Terms Compensation) Act 1991.**

Coal seam gas mining is exempt from a number of other environmental statutes, including the Native Vegetation Act 2003 and the Water Management Act 2000. IRN believes it necessary that the CSG industry, like any other extraction activity, is made subject to water management regulations and other environmental protection legislation.

IRN believes that the legislation controlling activities on public lands are inadequate to prevent coal seam gas mining, which when approved effectively privatises public lands and can lead to the fragmentation and degradation of these natural areas as described above.

IRN would anticipate that this inquiry would address the poorly understood interaction with Federal legislation relating to protected environmental areas and listed species at the exploration phase of CSG projects.

IRN sees that currently the regulatory processes, including assessment, approval and compliance are all drastically inadequate for the CSG industry that has developed. Once again, IRN would see this as been a critical component of what this inquiry is seeking to investigate and address.

**5. The impact similar industries have had in other jurisdictions.**

IRN believes that the experiences of CSG development in other jurisdictions are valuable in highlighting the significant risks associated with this CSG industry, particularly those related to environmental degradation and damage and depletion of water resources. Experiences in Queensland have detailed impacts on groundwater evidence from drops in bore levels while experiences from further abroad have demonstrated the toxic nature of chemicals used in the fracking process and the systematic methane contamination of groundwater.

NSW therefore has the opportunity to learn from the experiences of other jurisdictions and put in place adequate and effective legislation, regulations and restrictions that relate to CSG development in order to safeguard the health of surface and groundwater systems, our environment and our communities into the future.