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# **Submission to the Senate Standing Committee on Rural Affairs and Transport**

## ***The Management of the Murray-Darling Basin***

### ***ADDENDUM***

#### ***Impact of Mining Coal Seam Gas***

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## **Introduction**

NSW Irrigators' Council (NSWIC) represents more than 12,000 irrigation farmers across NSW. These irrigators access regulated, unregulated and groundwater systems. Our members include valley water user associations, food and fibre groups, irrigation corporations and commodity groups from the rice, cotton, dairy and horticultural industries.

This document represents the views of the members of NSWIC. However each member reserves the right to independent policy on issues that directly relate to their areas of operation, or expertise, or any other issues that they may deem relevant.

## Background

The level of interest in Coal Seam Gas (CSG) mining has increased rapidly as stakeholders and the general public have become more aware of this mining practice and the potential impacts from it.

We acknowledge that mining is an important part of the NSW economy and there are growth opportunities in CSG. However, the communities, environmental assets, farm enterprises and local businesses are also very important and contribute significantly to the economy and growth opportunities for NSW. They also have a much longer life span than a limited resource like CSG.

The Rural Affairs and Transport References Committee expanded their terms of reference within The Management of the Murray-Darling Basin to include the Impact of Mining Coal Seam Gas on the Management of the Basin.

The committee will examine:

*The economic, social and environmental impacts of mining coal seam gas on<sup>1</sup>:*

- *the sustainability of water aquifers and future water licensing arrangements;*
- *the property rights and values of landholders;*
- *the sustainability of prime agricultural land and Australia's food task;*
- *the social and economic benefits or otherwise for regional towns and the effective management of relationships between mining and other interests; and*
- *other related matters including health impacts.*

NSWIC appreciates the opportunity to lodge an addendum to our original submission now that the terms of reference have included a specific section on CSG.

The enormity of this topic precludes NSWIC from making a thorough submission as we do not hold sufficient knowledge on it. We do however have grave concerns as to the potential impacts mining CSG could have on land and water resources in the Murray-Darling Basin (MDB) and we will concentrate on these areas in our submission.

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<sup>1</sup> Rural Affairs and Transport References Committee – Inquiry into the management of the Murray-Darling Basin – Impact of Mining Coal Seam Gas – Terms of Reference

## Coal Seam Gas

Coal Seam Gas which is also referred to as Coal Seam Methane or Coal Bed Methane is the product of a controversial mining process.

Geological studies are conducted to determine the best areas to drill exploratory holes for core geological samples. Once identified, test wells are drilled into the coal seam, but these holes alone will not usually release large amounts of gas.

A process of fracturing the coal seam (also referred to as fracking) is required to release sufficient gas (methane) from the well. The fracking is facilitated by the high pressure injection of a fluid which causes cracks in the coal seam. The chemicals and products used in the fracking cocktail varies, but can contain water, acids, benzene, toluene, ethylbenzene, xylenes, hydrocarbons, sand, foams, nitrogen and CO<sub>2</sub>.

The final process before CSG can flow freely is the removal of water from the well. Water which overlays a coal seam is pumped out so as to reduce pressure and allow the gas to be released. This water is usually very saline and can contain some of the chemicals used in the fracking process.

It is hard to determine the volume of water which is removed as it depends on the well. Regardless, this water is not suitable for use and needs to be treated.

The prospect of having to endure this mining process is extremely challenging for many areas of Australia, but none more so than stakeholders in the MDB. Obtaining a full understanding of the processes used in drilling, fracking and extracting CSG is difficult to achieve.

Envisioning an array of mining wells on or near agricultural properties in the MDB, the pumping of a chemical cocktail into the ground and the use of vast amounts of water in order to extract a methane loaded gas is to say the least extremely challenging for our members.

In the past, there has been a reliance on State and Federal Governments to regulate and monitor mining activity. This is now proving to be insufficient as it appears the race to secure the large royalties from such mining activities is more desirable than the long term viability of the area.

## **Water**

NSWIC Members are extremely concerned about the impact mining CSG could have on the sustainability of water resources now and into the future. There is also concern regarding insufficient data on the status and level of groundwater sources to determine if there was a decline in water level, pressure or quality to prove that CSG extraction caused or contributed to the damage.

A great deal of work has been done in the MDB to understand groundwater sources but no one fully knows the extent to which aquifers are interconnected or connected to surface water sources.

Potential problems exist during several activities associated with mining CSG. One example would be during the process of fracking the coal seam. This fracking creates micro-seismic events in order to open up pathways in the coal seam. There is the potential these pathways will intercept natural cracks or faults in the surrounding rock, which could mean the fracking fluid or CSG can move into the surrounding areas. The resulting contamination can go undetected or be extremely difficult to ameliorate.

The chance of long term and potentially irreversible damage to aquifers, groundwater and surface water resources increases exponentially the more mining is allowed to take place.

NSWIC Member concerns range from the chemicals used in the fracking process to the treatment and disposal of the contaminated water extracted from the wells; from permanent damage to aquifers, to cross contamination between aquifers of differing water qualities; and from the release of methane gas into the environment to a change in drainage patterns through land subsidence.

The MDB has for years been labelled as an area where overuse of water resources has contributed to a decline of the rivers and environmental sites. Irrigators depend on a healthy environment to deliver the most important input to their business, water. Extensive work has been done and continues presently to improve on-farm practices and delivery systems for ensure a balance is maintained for everyone's benefit.

Having an agricultural industry focused on efficiency and the environment only to place in its midst a mining industry which is not, is unacceptable. All CSG mining activities have the potential to affect the sustainable use of the MDB's water resources in the short and long term.

## Land

The MDB is some of the most productive prime agricultural land in Australia. The potential that mining could cause irreversible damage to these lands is supported by several publicly available documents.

A report from Arrow Energy provided the following:

*“An average of 5-8 tonnes (5000-8000kg) of salt are expected to be produced for each megalitre (1 million litres) of coal seam water. The amount of salt is dependent on the location and age of the coal seam.”<sup>2</sup>*

Listed in the MDBA Guide to the Proposed Basin Plan is a reference to the effects of salt on the MDB.

*“... export of salt and nutrients from the Basin — without salt export land will salinise and water quality will deteriorate with negative effects on both the environment and consumptive use for all irrigation and human water needs throughout the Basin.”<sup>3</sup>*

The MDB already has to account for high salt levels which occur naturally as well as through water extracted for towns, irrigation and industry. Adding additional salt through a mining process only increases the impact it is already having on the land.

Other land impacts through the creation of access roads, installation of mining wells and additional heavy vehicle traffic can also only have a negative impact on the land.

## Other Areas

Existing legislation and regulation attempts to “minimise the risk” of mining operations contamination of aquifers or impacts on the land. The reality is that there are inherent risks with mining and regardless of the precautions taken the risk of permanent damage will always exist.

NSWIC will only be able to endorse a position that requires mining companies to establish beyond any doubt that negative impacts will not occur.

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<sup>2</sup> Arrow Energy – Water and Salt Management (June 2010)

<sup>3</sup> MDBA – Guide to the Proposed Basin Plan – Volume 1 – page 113

## Summary

If there is a reasonable chance of a negative impact to water resources or the environment in the short or long term, then approval of mining CSG must not proceed.

Agriculture is far too important to the future of all Australians to have anything else potential impact on its ability to provide for the country.

With regards to the protection of water resources and the cumulative effects of mining, NSWIC recommends this Committee review the National Water Commissions position on Coal Seam Gas.<sup>4</sup>

Finally, any outcome must protect the integrity of aquifers and the quality of the water within them.

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<sup>4</sup> National Water Commission - <http://www.nwc.gov.au/www/html/2959-coal-seam-gas.asp?intSiteID=1>