

**Submission
No 410**

INQUIRY INTO COAL SEAM GAS

Organisation: Gwydir Valley Irrigators Association

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Submission to the NSW
Government's Standing Inquiry into
Coal Seam Gas in NSW

September 2011

Background

The Gwydir Valley Irrigators Association (GVIA) represents in excess of 250 irrigators in the Gwydir Valley of NSW, centred on the town of Moree, NSW.

The organisation is voluntary, funded by a cents/megalitre levy on regulated unregulated and groundwater irrigation entitlement. In 2010/11 the levy was paid on in excess of 90% of the eligible entitlement (excludes entitlement held by the State and Federal Government).

The Association is managed by a committee of 11 irrigators and employs a full-time executive officer and a part-time administrative assistant, as well as hosting a Regional Landcare Co-ordinator.

The Gwydir Valley is located in North West NSW, west of the Great Dividing Range and its main tributary is the Gwydir River (Figure 1). The headwaters of the Gwydir River are west of Armidale and Guyra on the New England Tableland. The river was regulated in the late 1970's with the construction of Copeton Dam, which has a capacity of 1364 Gigalitres and is located approximately 90 km downstream of the headwaters of the Gwydir River.

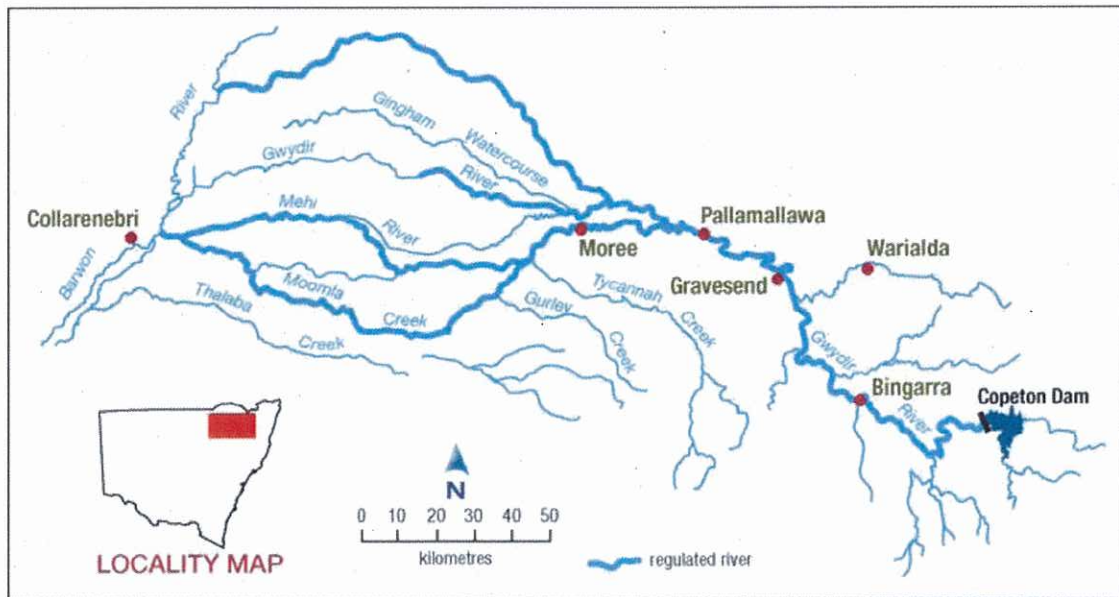


Figure 1. Gwydir Regulated River (Source: NSW Office of Water)

The only other major tributary, the Horton River with its headwaters in the Nandewar Ranges, enters the Gwydir River downstream of Bingarra. Above Moree, the Mehi River breaks off to the south. Further distributaries above Moree are the Carole/GilGil Creeks to the north. Downstream of Moree the Gwydir River breaks into two major streams known as the Gingham Watercourse (northern arm) and the Lower Gwydir or Big Leather Watercourse (southern arm).

Prior to the construction of the Copeton Dam, the Gwydir catchment could have been described as an inland delta or a closed system. Water only entered the Barwon River during major flood events, and all smaller flows discharged into the Gingham and Lower Gwydir Watercourses. However, due to extensive channelization a number of previously closed reaches now contribute water more frequently to the Barwon River. The Gwydir River is unique in that its end-of-system flows are greater now than before development.

The Gwydir Valley has a number of significant wetlands including the internationally significant RAMSAR wetlands. The Gwydir Wetlands have an estimated area of 82,000 Ha including permanent and semi-permanent wetland areas, these are amongst the most extensive in north-west NSW. The wetlands provide a good example of an inland terminal wetland delta system. They support a wide variety of rare, endangered and vulnerable species, and when flooded, sustain large numbers of waterbird breeding colonies.

The Gwydir Valley is also characterised by a number of groundwater sources including the Great Artesian Basin and significantly, the eastern and southern recharge zones for this vast system (Figure 2).

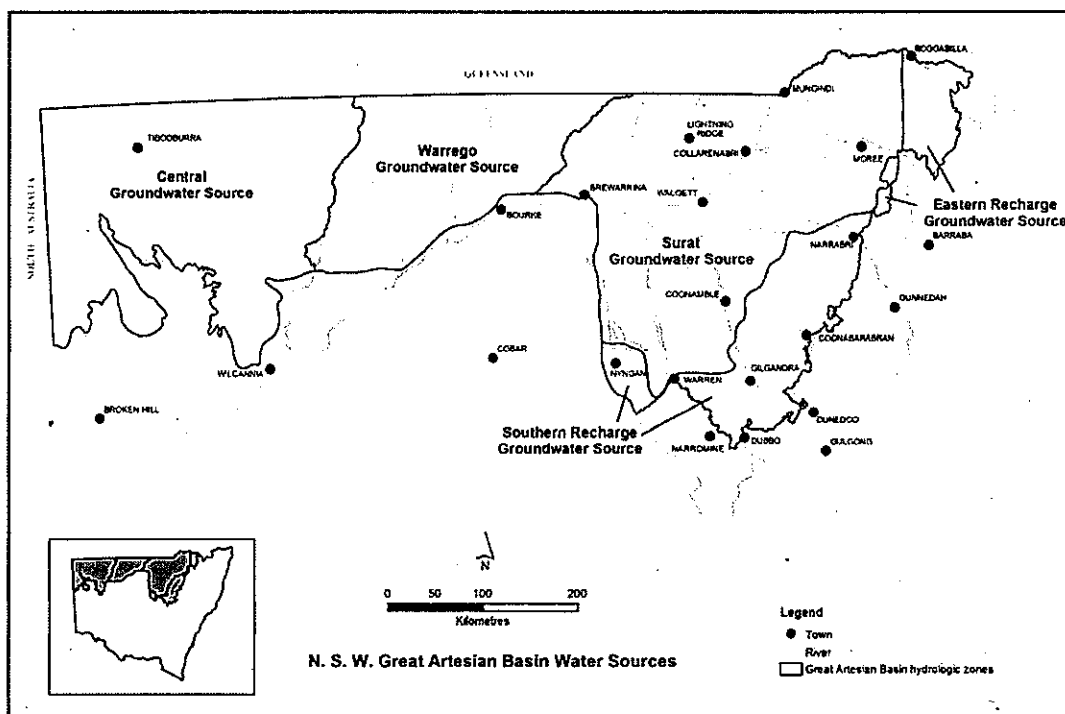


Figure 2: Great Artesian Basin water sources in NSW (Source: NSW Office of Water)

Groundwater is essential in the region, as it provides the drinking water for many of the towns and properties and is one of the region's major tourism attractions with the Hot Artesian Spa Baths.

The majority of water within the Gwydir Valley is managed through the establishment of water sharing plans or under conditions within the Water Act 1912. The Gwydir is characterised by the following water sharing plans:

- Gwydir River Regulated Water Source;
- Rocky Creek, Cobbadah, Upper Horton and Lower Horton Water Source;
- Lower Gwydir Groundwater Source; and
- NSW Great Artesian Basin Groundwater Sources.

Entitlement currently held within the Gwydir valley to-date includes is presented below in Table 1: Entitlement within the Gwydir Valley held within Water Sharing Plans

Table 1: Entitlement within the Gwydir Valley held within Water Sharing Plans

	Licences (no.)	Entitlement	Type	Comment
Gwydir Regulated Water Source				
DOMESTIC AND STOCK	69	2,506.00	ML	
DOMESTIC AND STOCK [DOMESTIC]	3	8	ML	
DOMESTIC AND STOCK [STOCK]	27	230	ML	
LOCAL WATER UTILITY	4	3,836.00	ML	
REGULATED RIVER (GENERAL SECURITY)	185	509,665.00	unit shares	
REGULATED RIVER (HIGH SECURITY)	19	14,817.90	unit shares	
REGULATED RIVER (HIGH SECURITY) [RESEARCH]	1	60	ML	
SUPPLEMENTARY WATER	175	177,346.50	unit shares	
Lower Gwydir Groundwater source				
AQUIFER	164	28,858.00	unit shares	
DOMESTIC AND STOCK	0	0	ML	
LOCAL WATER UTILITY	2	3,572.00	ML	
SUPPLEMENTARY WATER	41	13,930.00	unit shares	
Great Artesian Basin Water Sharing Plan				
EASTERN RECHARGE	70	32,121	unit share	Gwydir
SOUTHERN RECHARGE	68	15,533	unit share	Gwydir
SURAT	32	6,614	unit	Gwydir

	Licences (no.)	Entitlement	Type	Comment
			share	
WARREGO	5	493	unit share	
CENTRAL	3	12	unit share	

NSW Office of Water has just released the Draft Water Sharing Plan for the Gwydir Unregulated and Alluvial Water Sources for comment and is in the process of developing draft water sharing plans for NSW Murray-Darling Basin Fractured Rock Groundwater Sources and Groundwater Sources Overlaying the NSW Great Artesian Basin.

GVIA believes that the Water Sharing Plans within the Gwydir adequately shares water resources between users and the environment and that all water and water uses within the valley should be included in such plans.

Gwydir valley irrigators over-time have been subjected to a number of government policies which has impacted their ability to utilise water resources within the valley. For example, approximately 27% of regulated river entitlement (not including High Security and Supplementary water entitlement) has been either purchased or diverted for environmental use following a series of programs including water sharing plan negotiations. Until only recently, through the Australian Government's Water for the Future funding was market-based compensation provided to water users.

Table 2 below highlights the program or reason behind water recovery within the Gwydir and the resulting entitlement being captured for sustainable water management.

Table 2. Program of Water Recovery and Entitlement

Year	Program	Volume of entitlement
1995	Murray-Darling Basin 1993/95 Interim Cap	
1996	Voluntarily reduced their general security reliability by 5%, by establishing the original Gwydir Valley Environmental Contingency Allowance (ECA) of general security equivalent water.	25,000ML General
2004	Gwydir Regulated River Water Sharing Plan further reduced reliability by 4%, primarily through increasing the ECA and enhancing its use and storage provision.	20,000ML General
2006	Lower Gwydir Groundwater Source Water Sharing Plan reduced groundwater entitlements from 68,000 mega litres to	39,300 ML Groundwater

	28,700 mega litres.	
2008 +	<p>NSW State Government has purchased approximately 17,092 mega litres of general security entitlement and the State bought 441 ML of supplementary entitlement.</p> <p>Commonwealth 89,525 mega litres of General Security Water with 375 mega litres of High Security Water. The majority of which was through buy-back and a minor proportion through Irrigation Efficiency Programs.</p> <p>Commonwealth also purchased in excess of 10% of the valley's supplementary entitlement.</p>	<p>395 ML High Security</p> <p>106,617 ML General</p> <p>19,100 ML Supplementary</p>

Terms of Reference of Inquiry

That General Purpose Standing Committee No. 5 inquire into and report on the environmental, economic and social impacts of coal seam gas (CSG) activities, including exploration and commercial extraction activities, allowable under the NSW Petroleum (Onshore) Act 1991 (the Act), and in particular:

1. The environmental and health impact of CSG activities including the:
 - a. Effect on ground and surface water systems,
 - b. Effects related to the use of chemicals,
 - c. Effects related to hydraulic fracturing,
 - d. Effect on Crown Lands including travelling stock routes and State forests,
 - e. Nature and effectiveness of remediation required under the Act,
 - f. Effect on greenhouse gas and other emissions,
 - g. Relative air quality and environmental impacts compared to alternative fossil fuels.

2. The economic and social implications of CSG activities including those which affect:
 - a. Legal rights of property owners and property values,
 - b. Food security and agricultural activity,
 - c. Regional development, investment and employment, and State competitiveness,
 - d. Royalties payable to the State,
 - e. Local Government including provision of local/regional infrastructure and local planning control mechanisms.

3. The role of CSG in meeting the future energy needs of NSW including the:
 - a. Nature and extent of CSG demand and supply,
 - b. Relative whole-of-lifecycle emission intensity of CSG versus other energy sources,
 - c. Dependence of industry on CSG for non-energy needs (eg. chemical manufacture),
 - d. Installed and availability costs of CSG versus other stationary energy sources,
 - e. Proportion of NSW energy needs which should be base load or peaking supply and the extent to which CSG is needed for that purpose,
 - f. Contribution of CSG to energy security and as a transport fuel.

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

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

Introduction

The Gwydir Valley Irrigators Association (GVIA) represents in excess of 250 irrigators in the Gwydir Valley of NSW, centred on the town of Moree, NSW.

The organisation is voluntary, funded by a cents/megalitre levy on regulated unregulated and groundwater irrigation entitlement. In 2010/11 the levy was paid on in excess of 90% of the eligible entitlement (excludes entitlement held by the State and Federal Government).

The Association is managed by a committee of 11 irrigators and employs a full-time executive officer and a part-time administrative assistant, as well as hosting a Regional Landcare Co-ordinator.

GVIA is a member of the National Irrigators Council and the NSW Irrigators Council, and as well as providing this submission, the Association endorses the submissions made by those two organisations.

GVIA welcomes the opportunity to make this submission to the NSW Government's Standing Inquiry into Coal Seam Gas in NSW and looks forward to providing the Inquiry with additional information, if requested.

One of GVIA's core business aims is to ensure the reliability of water quality and quantity within the Gwydir Valley for our members and the communities in which we live. As a result, GVIA has focussed this submission on the issues surrounding water both surface and groundwater; its regulation, management and use, following coal seam gas exploration and production activities. GVIA does not, claim to have expertise regarding activities and process of gas extraction or processing and therefore, has made limited comment of these issues.

GVIA believes that it is absolutely critical that the Inquiry tours the areas earmarked for coal seam gas and takes evidence at a large number of communities and from a wide range of sources to ensure that a wide range on issues and interpretations are received on the issue. GVIA would welcome the committee to our Valley and would be more than obliging to organise any tours if required.

Comments regarding the Terms of Reference

1. *The environmental and health impact of CSG*

a. Effect on ground and surface water systems

Gwydir Valley Irrigators Association (GVIA) strongly endorses the NSW Irrigators Council policy that aims for:

The preservation of sustainable resources for agriculture – including water – must be absolute in addressing mining exploration or operational licence applications.

Agriculture has been the back-bone of the Gwydir Valley for 100 years, with irrigated agriculture in the district since 1970's whereas, coal seam gas mining, is a relatively new industry to the region and rapidly looking to expand in the area. The two industries must co-exist in a way that each is synergetic and considered an asset to the other. To achieve this, there needs to be a greater understanding of the potential environmental, social and health impacts associated with mining and agriculture. This information needs to be independently sourced and peer reviewed. The current reliance on self-regulation and mining company science is unacceptable.

For example, GVIA has serious concerns regarding the lack of independent information on the impacts to water aquifers and the management of the water as a by-product of coal seam gas extraction. The Namoi Water Study or equivalent needs to be replicated across other valleys where mining and irrigated agriculture has the potential to coexist. Such a study will help to unravel the complexity of surface water and groundwater interactions within the valleys, which we are yet to fully comprehend.

GVIA believes that scenario testing of the risks associated with individual licence applications and the accumulated impacts in the region must be assessed on a number of time scales. This information will be critical in assessing the ability of the two industries to co-exist and could help formulate a set of guidelines or criteria for appropriate extraction conditions.

Ultimately, GVIA would encourage the establishment of minimum guidelines for the conditions in which coal seam gas mining can occur. Firstly, this would help guide the community to better understand the potential benefits and risks associated with the industry but also identify what is considered acceptable, in terms of risks and impacts. These criteria would be an extension of the Strategic Landuse Policy, looking at underground conditions as-well as above ground circumstances. For example, one criteria could consider that CSG activities would only be acceptable where there was a minimum level of containment (distance and density) between the coal seam and the surrounding aquifers was apparent. Such criteria may also act to help both

agriculture and mining industries move forward and reduce business uncertainty.

GVIA also believes that the information collected from such a study like the Namoi Water Study, should be used to help inform other regional planning initiatives including water sharing plans and local catchment management action plans. All regional planning and investment should be complimentary; focussing on integrating catchment management and sustainable management principles across all industries, equally.

b. Effects related to the use of chemicals,

GVIA is not only concerned about the potential impacts to water quantity and reliability but also to quality. Bore drilling for irrigation and stock and domestic purposes must meet The Minimum Construction Requirements for Water Bores in Australia. GVIA is unaware of any Australian Standard for the drilling of bores for coal seam gas extraction, and both industries should be treated equally in respect to regulation.

Such standards would help to reduce the risk of drilling chemicals impacting aquifer and changing their chemistry.

c. Effects related to hydraulic fracturing,

GVIA has serious concerns regarding the technique of hydraulic fracturing. The technique aims to release gas from coal seams that are under-producing where de-pressurisation has still has not released all of the coal seam gas. The technique injects water and chemicals to expand fractures within the coal seam.

There are significant risks associated with expanding fractures and the extent of impact is relatively unknown. For example, the worst-case scenario could mean that a coal seam and surrounding aquifers that were once confined become linked and therefore, both the coal seam aquifer and surrounding aquifers are de-pressurised in an attempt to release coal seam gas. This scenario is unacceptable and modelling of this scenario must be undertaken for each licence, with accumulative impacts also assessed.

It has also come to GVIA's attention that there are new and emerging technologies in terms of multi-pad drilling and lateral drilling which can be utilised in place of hydraulic fracturing. These practices must be explored prior to the utilisation of hydraulic fracturing, which must be site-specific approved.

2.The economic and social implications of CSG activities including those which affect:

b. Food security and agricultural activity

As indicated above, GVIA advocates for the two industries to work synergistically. Actions and activities by each industry must not impact; either directly or indirectly on the other.

As a result GVIA supports greater investigation on the interrelatedness of mining and agriculture and the risks associated with water quantity, reliability and water quality. The geographic and temporal scales of these risks must also be investigated, to fully understand the long-term implications of such development.

The Gwydir region is rich in agriculture and highly productive, generating around \$900M in GDP. Although, this is a fraction of the mining industry, with such a small percentage of Australia arable and the Gwydir region one of the more productive regions, each industry needs to be put in perspective of its; sustainability, ability to be dislocated and national significance now and into the future. In this context, agriculture has already proven its sustainability (and adaptability); it is geographically limited and is essential that Australians we can feed and clothes ourselves. Any short-term benefit from a limited life-span activity like mining must be compared to the long-term nature of agriculture.

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

GVIA has serious concerns about the perceived benefits that mining (either coal or coal seam gas) has to local communities and the regional economy. Agriculture and irrigated agriculture is the back-bone of the region and the flow-on effects from every dollar generated in the industry locally is considered three-fold. The same cannot be said for mining.

The social cost must be accounted for when reviewing and approving licences. This must take into account the short-term nature of the industry or the "false industry" versus the long-term, sustainability of agriculture in the region. The fact that many mining regions still struggle with the false economy created by the industry cannot be ignored.

In addition, there is significant disconnect between the mining industry and the community in which it is operating. Although most mining companies have a policy for regional and community generosity and sponsorship, the transient work-force and the temporary nature of the industry do not promote inclusiveness. Not to mention that there is a limited proportion of the local population that have the opportunity to capitalise on the industry; accommodation, vehicles sales and rental business may benefit for example but the every-day person in most cases will gain no benefit from the industry at all but rather be disadvantaged through higher prices for housing and wages for example.

Another reason for discontent within the community is that coal seam gas mining is expanding regionally to initially meet export markets and peak load domestic use. Neither market has direct connection with the community in which it is being produced from as many do not have the ability to utilise the resource.

Other Comments

Water is a resource that generates considerable debate, which is often very emotive and in the last 20-years has resulted in significant policy regulation following community concerns. As explained in the background section, irrigators have been scrutinised to be efficient in their use and management of water and had their resource availability significantly reduced to improve the quality of the resource for the public good. However, mining industries as currently active in NSW appear exempt from such scrutiny or regulation, and seemingly under-value the resource by inefficiently storing and using the resource following extraction of their primary goal; coal seam gas or coal.

GVIA encourages mining companies to realise the value of the resource they consider a by-product and manage it, as irrigators do, efficiently and sustainably. Moreover, GVIA considers that in the current political climate regarding water, mining companies should also consider managing it for the greater public good.

As a result GVIA would support the concept of substitution of coal seam gas water for groundwater from different aquifers provided it was the same or better quality. Such substitution should aim to have a wider community benefit. For example, it could be used to replenish a depleted resource or consolidated as a temporary water source as in the replenishment of Roma's town water supply in South-West Queensland.

However, substitution should not result in the establishment of a new industry that does not already exist and must be mindful that it must responsibly and sustainably use the substituted water. Any substitution activities must be clearly assessed independently and scenario tested to attempt to assess all the risks associated with such an activity.

The short and long-term storage of water by mining companies is also of a concern to GVIA. Best management practices for storages should also be adopted by the mining companies, in an attempt to be efficient with their resource.

Mining and coal seam gas extraction is occurring throughout Australia and it is naïve to believe that the impacts will be contained between state boundaries. As a result an inter-governmental agreement and/or standards and regulatory bodies must be established in each state in-which there is interconnected

resources; either mines or water aquifers. This will allow for greater understanding of resource use both water and coal, transparency in the industry and importantly consistent regulations and standards across each area.

This will also help to further explore the potential accumulative impacts that the industry may have. For example, coal seam gas mining in Queensland is occurring in aquifers of the Great Artesian Basin, which also extend in the NSW. Current water sharing plan arrangements do not account for this additional water use, which may have an impact on the availability and quality of water in any of the Great Artesian Basin using states.

Conclusion

GVIA welcomes the opportunity to make this submission to the NSW Government's Standing Inquiry into Coal Seam Gas in NSW. Coal seam gas mining is rapidly expanding and it is our opinion that the perceived benefits and impacts are poorly understood.

GVIA has focussed this submission on the issues surrounding water both surface and groundwater; its regulation, management and use, following coal seam gas exploration and production activities. GVIA does not, claim to have expertise regarding activities and process of mining, gas extraction or processing and therefore, has made limited comment of these issues.

GVIA believes in short that the industry requires greater regulation and investigation. That there needs to be more independent investigation into the ability for the two industries to co-exist. If the risks are too high than agriculture as our long-term, sustainable and essential industry must survive.

However, GVIA is also concerned at the capacity of Government regulatory bodies to deal with the anticipated scope of mining and coal seam gas exploration and production in the short and long-term future. Resources must be made available to allow the appropriate investigation, management and compliance of the industry.

GVIA believes that it is absolutely critical that the Inquiry tours the areas earmarked for coal seam gas and takes evidence at a large number of communities and from a wide range of sources to ensure that a wide range on issues and interpretations are received on the issue. GVIA would welcome the committee to our valley and would be more than obliging to organise any tours if required.