8th July 2011

Committee Secretary

Senate Standing Committee on Rural Affairs and Transport

PO Box 6100

Parliament House

CANBERRA ACT 2600

rat.sen@aph.gov.au

Dear Sir

Submission for the Inquiry into the management of the Murray-Darling Basin - Impacts Coal Seam Gas Extraction.

On behalf of the Caroona Coal Action Group (CCAG) and the landholders and supporting industries of the Namoi Catchment I thank the Senate Standing Committee on Rural Affairs and Transport for the opportunity to make this submission on the impacts of coal seam gas extraction in the Murray-Darling Basin.

The Coal Seam Gas (CSG) Committee of the Caroona Coal Action Group was formed over three years ago in response to the exploration licenses granted by State Government to explore for CSG on the Liverpool Plains. Our intention is to preserve Australia's most reliable and productive agricultural area with its related aquifers and waterways. Growing recognition of the importance of food security and world-wide groundwater depletion issues has led to huge groundswell of support, not just from the farmers and communities of this region but from many communities all over Australia.

The Liverpool Plains is located in the Namoi Catchment which is a significant contributor to the Murray–Darling Basin. Issues raised in this submission relate primarily to the impacts of CSG on the unique geology of the Liverpool Plains but can be applied also to the Murray-Darling Basin.

I thank the committee for the extra time granted to make this submission.

Please do not hesitate to contact me to discuss this paper.

Yours faithfully

ROSEMARY NANKIVELL

CHAIRPERSON

COAL SEAM GAS COMMITTEE

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Executive Summary.

It is difficult to properly address the impacts of the CSG Extraction industry on the Murray-Darling Basin without clear forward projections from the industry. As a researcher of this industry for some years now, I am constantly hampered by the failure of gas companies to provide clear information on their activities in the Liverpool Plains. Most reliable information has come from researching the Australian Stock Exchange and various subsidiary companies. Gas companies hide behind "commercial-in-confidence" claims. Announcements are made to the Stock Exchange while the landholders are still uninformed and living in ignorance of the plans of these companies. Indeed the Gunnedah Shire found out that gas companies proposed to drill through the aquifer which supplies the township of Gunnedah with its water early in 2011 from a diligent shareholder. Transparency from gas companies is essential.

An overarching plan which would enable the cumulative impacts of CSG extraction to be assessed is essential to properly assess the impacts this industry will have on the Murray-Darling Basin. It is not sufficient for environmental impact statements to be submitted on a project by project basis. The industry has to be examined as a whole to properly assess its impact.

Of major concern are the issues of aquifer depletion contamination and destruction. The integrity of the aquifers must be preserved to enable the intricate waterways of the Murray-Darling Basin to function and sustain existing communities.

Infrastructure will interrupt farming practices and severely impinge on the farmer in his business activities. Labor will be difficult and expensive to source as farmers compete against gas companies for labor. Devaluation of the farming properties will force many farmers off the land.

The health impacts are yet to be examined in full and a thorough investigation of these impacts needs to be undertaken.

Above all, a comprehensive and thorough regulatory framework must be imposed. It is not good enough for government to introduce regulations after an event. A sustainable land-use pattern must be developed with clear no-go zones for the extractive industries and a respect for the existing industries and communities.

The CSG industry is a vast one with many aspects which concern the farmers of the Liverpool Plains. In recent times, voluntary and uncompensated cut-backs have been endured by the irrigation farmers which has created considerable hardship to some. Dwindling groundwater supplies concerns us all. It is therefore inherently wrong that such a water intensive industry should be welcomed by the government into a farming community whose very existence relies on the quality and quantity of our underground water supplies.

I am yet to see any mention of rehabilitation of the farmland after the gas industry has left. This is quite common for the coal industry to give such details but the CSG industry appears to be exempt from these considerations.

The concerns held by the farmers and local communities must be addressed before exploration takes place. This inquiry is a step in the right direction for such issues and is welcomed by the Liverpool Plains communities.

Impacts of Coal Seam Gas Extraction in the Murray-Darling Basin.

The Contribution of the Liverpool Plains to food production and security in Australia and Globally.

The Liverpool Plains, approximately 450kms north-east of Sydney, covers 1.2 million hectares of the north-western slopes of New South Wales. The area is prime agricultural land and recognized by many to be the best farming country in the world. The landholders are well respected for their innovative and advanced farming practices.

The Liverpool Plains is renowned for its high yields and crops security relative to other farming regions in Australia. Its fertile black soils have a high water holding capacity with reliable summer and winter rainfall. It is an area which yields 40% above the national average and grows a diverse range of crops such as wheat, sorghum, oats, soybeans, barley, corn, sunflowers and cotton. It has a beef industry worth over $110 million per annum. It also produces chickpeas, soybeans, mungbeans, canola, olives, turkeys, chickens, pigs, lamb and wool. The area is unique in that it produces two crops per year, unlike the majority of farming areas. The Liverpool Plains contribute **$332 million to the GDP** annually. (These figures are from 2007 – which is considered to be a "drought year" during one of the worst droughts in history.)

The Importance of the Namoi Catchment to the Liverpool Plains and the Murray-Darling Basin.

The Liverpool Plains are located in the Namoi Catchment which feeds into the Murray Darling Basin. The area is bounded to the east by the Great Dividing Ranges, to the south by the Liverpool Ranges and to the west by the Warrumbungle Ranges. These ranges, along with the hilly outcrops on the plains favored by coal miners, provide a significant recharge to the area. The catchment area is drained by the Namoi River and its tributaries, the Mooki and the Peel Rivers which flow into the Murray-Darling waterways.

Agriculture in this area relies on the sound management of high output aquifers which contribute immensely to its productivity as well as the ability for the soils to retain moisture. While there are many successful irrigated properties, there are even more properties without irrigation where dryland farming techniques are employed. These farms rely on skilful management, innovative practices such as no-till cultivation and a reliable rainfall pattern.

However, the preservation of the aquifers, and hence our water supplies for domestic, stock, farming and every community is the overriding concern of those who have lived and farmed successfully and innovatively for decades in this area.

A Simple Explanation of the CSG Extraction Process.

The extraction of CSG is a relatively new industry in Australia. Commercial production was not significant until 2004 in Queensland. The following is a simple explanation of the CSG extraction process.

Coal seam gas is bonded (through geological and hydrological pressure) to cleats and fractures of the coal. It is held in the coal by burial pressure and water. To extract gas, drilling rigs drill numerous holes into the coal seam aquifer at depths of over 3,500 metres. The aquifer is then

dewatered, reducing pressure and causing methane flow in cleats to the well.[1] The process of "fraccing" involves a mixture of sand, water and synthetic polymers being forced at great pressure into the coal seam to fracture the aquifer and allow the coal seam water escape to the surface. The bulk of the water is extracted at the top of the well. The gas is then piped away to a compressor station for further treatment. Much has been made of the process of fracking – a process which has been recently banned in France. Other methods include "cavitation" and "acidization" – all methods which rely heavily on the injection of chemicals into the aquifer. These methods purport to achieve the same purpose as fracking i.e. an aid in the release of gas. All three methods rely upon the premise that the roof aquitards are effective seals to maintain the integrity of the drill hole and prevent the migration of methane, drilling fluids and inferior water. However roof aquitards are not effective seals as they will still transport water.

The fallacy of CSG extraction as a clean green industry.

There is ample evidence from America and other countries which illustrates the fallacy that CSG is a clean green energy source. Methane gas (CH4) is a highly volatile and soluble gas held in the earth under extreme pressure. It escapes and migrates very easily when disturbed. As a greenhouse gas it is 22 times more damaging than CO2 to global warming. More recently scientists claim that methane is in fact 79 more damaging as a greenhouse gas.[2]

Ian Dunlop[3] states that whilst gas, when burnt has roughly half of the emissions of coal. Using the outdated formula that that methane is around 25 times more damaging than CO2, he states that a leakage rate of around 3 per cent negates the advantage gas has over coal. Typical leakage rates are claimed to be around 1.5 – 2% yet this figures is difficult to prove. Leakage occurs during the fraccing process, as well as during capture, storage and transportation. Professor Richard Howarth of Cornell University states that over a 20 year period that gas is on a par with coal if not worse.[4] CSG extraction requires many wells being drilled over an extensive area using large amounts of water, with potential risks to aquifers and land use. This emphasizes the need for high standards of regulations and compliance with associated costs if these new industries are to operate responsibly. [5]

Water Extraction and Disposal Issues.

CSG extraction is highly water intensive industry. As well as a huge groundwater extraction, clean potable water is locally sourced and used throughout the process. Both types of water have to be disposed of and this has presented an over-riding problem in the gasfields of Queensland - and in America.[6] This water usually has an extremely high salt and heavy metal content. The heavy metals include hydrocarbons, carcinogens, radioactivity, mercury, copper,

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[1] Coal Seam Gas Water – Queensland's Water Crisis – TressCox Lawyers – Newsletter Article – 16 December 2008

[2] IPPEC

[3] *Ian Dunlop was formerly an international oil, gas and coal industry executive. He chaired the Australian Coal Association in 1987-88, chaired the Australian Greenhouse Office Experts Group on Emissions Trading from 1998-2000 and was CEO of the Australian Institute of Company Directors from 1997-2001. He is deputy convenor of the Australian Association for the Study of Peak Oil*

[4] http://lockthegate.org.au/documents/doc-319-pnas-2011-osborn-1100682108.pdf

[5] http://morethanluck.cpd.org.au/making-it-last/facing-our-limits/

[6] Water Issues Associated with Coalbed Methane in the Powder River Basin of Wyoming and Montana – Department of Resources, University of Wyoming, Laramie and Montana Bureau of Mines and Geology, Billings.

silver, arsenic, tellurium, nickel, boron, lead and selenium and halogenated methanes.[7] To date, this water has been left to evaporate in vast shallow ponds ranging from one to 100 hectares. As these ponds sometimes have no lining and are held intact by compressed soils, these areas will be extremely difficult, if not impossible, to rehabilitate. Aquifers beneath these ponds will also be subject to the leaching of coal seam water through the compressed earth.

Salinity of CSG water is variable with Total Dissolved Solids (TDS) values varying from 200 to more than 10 000 milligrams/litre. (Plants are affected by water with TDS as low as 1000mg/l.)

The Queensland government in 2009 estimated that coal seam water had a very conservative TDS value of 2500 mg/l. In this area, water extracted from the Hoskinnson Seam has TDS values of approximately 10000mg/l. Using projections for the LNG industry in Queensland of an annual volume of 100 GL of CSG water, it is calculated that disposal of this water in two-metre-ponds requires 5000ha in year one and 10 000ha (100km2) by year 15. These estimates are for area only and do not consider design requirements for the maximizing efficiency of brine concentration, safety, allowance for rainfall, nor maintenance or decommissioning requirements. Exploration may also add to the total water produced.[8] The area of evaporation ponds required for disposal of an annual volume of 100 GL of CSG water over 30 years is roughly two and half times the size of Sydney Harbour. At the end of 30 years, this area could contain more than 7.5 million tons.[9] Disposal of this vast amount of salt has not been addressed.

As yet, the gas companies have no commercially viable alternatives to evaporation ponds despite their promises of solutions such as using treated water for tree plantations and the use of reverse osmosis. In 2008, the Queensland government demanded that the use of evaporation ponds to be discontinued as a primary means of disposing of CSG water. Remediation of existing evaporation ponds was is to occur within three years.[10] As yet there appears to be no adherence to this expectation. It would be expected that the NSW state government adopt far more stringent standards. Practices such as reverse osmosis and reinjection are extremely expensive and highly energy intensive. Reinjection in the Liverpool Plains would result in widespread contamination of the complex and interconnected aquifers underlying the plains

From a food producer's viewpoint, these evaporation ponds result in highly toxic salt being blown by the wind onto adjoining farmland or leaching into the aquifers beneath them. Vast tracts of arable land are used up hosting these ponds. Many farming communities have successfully dealt with salinity issues to date, but the wind-blown salt only exacerbates these problems. It causes scalding and deterioration of soil quality and promotes the growth of noxious weeds.[11]

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[7] Coal Seam Gas Water – Queensland's Water Crisis – TressCox Lawyers – Newsletter Article – 16 December 2008

[8] Management of water produced from coal seam production – Discussion paper – May 2009 – Queensland Government, Department of Infrastructure and Planning.

[9] Management of water produced from coal seam production – Discussion paper – May 2009 – Queensland Government, Department of Infrastructure and Planning.

[10] Management of water produced from coal seam production – Discussion paper – May 2009 – Queensland Government, Department of Infrastructure and Planning.

[11] Coal Bed Methane Hazards in NSW – C.M. Atkinson - January 2005

Increased Seismic Activity

There is increasing evidence that exploration drilling, reinjection and the fraccing process is directly related to increased seismic activity. The Upper Namoi Catchment is located on the Hunter-Mooki fault line – the same fault line as the disastrous Newcastle earthquakes. It is essential that this instability will not be increased by the CSG extraction processes.

Evidence from international experience is of concern. In May 2006, an earthquake erupted triggered by exploratory drilling causing mudslides in the East Java province of Sidoarjo. Over 75,000 people were displaced with massive damage to homes and infrastructure and the environment. Santos, the largest gas company operating here in the Namoi Catchment, was the technological lead for a gas project in the area and held an 18% stake in its Indonesian Brantas production sharing contract. Santos has subsequently quit the stake to extricate itself from any potential future penalties for the mudslide disaster.[12]

Since June 2nd 2009, there have been five small earthquakes in Texas Barnett Shale gasfields. In May, earlier this year, three other smaller quakes were also felt at Bedford, a suburb of Dallas and Fort Worth and Grand Prairie. Seismic activity was not recorded in the town's history until the establishment of a rapidly expanding CSG industry. A geologist has subsequently been employed to examine the connection between the fraccing process and the earthquakes. Other seismic activity associated with fraccing, reinjection of waste water and similar technologies have occurred in Ohio USA, Bazel Switzerland and the Gazli gas fields in Uzbekistan.[13]

Irreparable damage and destruction of aquifers.

The National Pollutant Inventory confirms that the Liverpool Plains does not produce food in an environment contaminated by any industry that liberates tonnes of toxic metals, fine silica dusts or carcinogenic petroleum hydrocarbons. It is a pristine area that is not polluted by any industries that leave a legacy of mine drainage, poisoned rivers and creeks, highly saline evaporation ponds and unpredictable methane scalds. This enviable situation must be preserved. If CSG extraction occurs, the Liverpool Plains will lose the purity and volume of its aquifers. The destruction and damage by CSG extraction in this vital area in the Namoi Catchment will diminish and contaminate flows of both surficial and underground water into the Murray-Darling Basin. This will destroy the productivity of these plains.

Damage to the aquifers occurs during the "fraccing process" where water, sand and polymers are forced down well holes at great pressure. Explosives are also used in the fraccing process. The fraccing process is best described as hitting a plate with a hammer from 10 paces. You will achieve your aim of breaking that plate – but it is difficult to control the extent of the fracture or the amount or size of the pieces that plate will be broken into.[14] This will irreparably alter the structure and permeability of the aquifers and their water transporting characteristics. After fraccing, methane gas, drilling fluids and the highly-toxic saline water extracted from the coal seam beds are able to migrate throughout aquifers and poison water supplies.

As a close observer of the Namoi Catchment water study it is disappointing to read in the initial draft report that Schlumberger Water Services (SWS) is unable to model in 3D the cumulative impacts of gas extraction on the groundwater in the Namoi Catchment. Such modeling is essential to assess impacts – in groundwater depletion and subsequent drawdown on potable aquifers. This 3D modeling should be used in every environmental impact assessment.

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[12] Update 1 – Santos exits Indonesia venture, mudflow liability – Reuters – 29/12/2008
[13] Hunter Valley Protection Alliance Forum 7/09/09
[14] Marcellus Shale Group – website – N.Y. State

We need to know when, where and in what amounts groundwater will be extracted. It is essential to know now of final plans for the disposal of waste water. Given the high toxicity of this water, it is not acceptable to simply flush this down an existing stream. If the industry were to proceed, gas companies should be made to pay for this groundwater. Long classified as "incidental' or "waste water," authorities have ignored the important role that this water plays in supporting shallower potable water aquifers.

Methane migration.

Methane, being highly volatile and soluble, migrates easily and quickly through fractures to the surface or to nearby openings such as water wells.

In September 2004, within a fortnight of initial gas testing, a CSG well north of Newcastle was shutdown as several boreholes up to 300m away began to blow off methane gas. At the time, there was a strong gas flow of 280,000 cubic feet/day even though the water level was still approximately 300 metres above the coal seam. This illustrates that even with only a partial withdrawal of the hydrostatic pressure, methane will migrate quickly and in unpredictable directions.[15]

In surface methane seepages through the soil, methane displaces the soil oxygen and the soil becomes anoxic leading to soil poisoning and vegetation destruction.[16] These are critical issues for farmers and would seriously affect their production levels as well as contaminating the quality of their produce.

CSG extraction occurs in 31 states of the USA. There are many reports of methane migration and it has now been publically acknowledged by the EPA that there is danger to human life from contamination and the migration and build up of methane in enclosed areas. The example of one Wyoming rancher who was told by a local gas company to always keep a window open in his house to prevent explosions in enclosed areas is fully documented and not isolated.[17] Obviously methane migration is a considerable risk to both humans and livestock.

Soil Poisoning.

Evidence of soil poisoning from CSG extraction in the Murray-Darling Basin include incidents at the Bohena well in an area of the Pilliga State Forest when a retaining wall of the salt water pond collapsed after a major rain event. In a separate event, an extensive leakage in a dam (excavated in sandy soil) resulted in the spread of sodic/saline liquid through the subsoil and shallow aquifers. Water from the dam and black sludge showed to have high levels of tannin with a sodium level of 3,700mg/litre. The area of dying vegetation continued to expand until this area covered an area of over 250m and a maximum width of 100 metres. This was considered to be a chronic case of sodic soil poisoning exceeding those previously occurring in the Powder River Basin in the USA.[18] It must be noted that TDS levels in the Powder River Basin is a mere 850mg/litre – far less than the 10000mg/l occurring in Australia.

On a recent visit (June 2011) to the Pilliga State Forest I was able to find the location of this overflow event. Over six years later there is no new vegetation or trees, just bare ground and

[15] Coal Bed Methane Hazards in NSW – C.M. Atkinson - January 2005
[16] Jones T.,2005 (Draft) Report on the Hydrological Investigations Dooralong & Yarramalong Valleys Wyong, Central Coast, NSW January.
[17] http://i2.democracynow.org/2009/9/3/fracking_and_the_environment_natural_gas
[18] Coal Bed Methane Hazards in NSW – C.M. Atkinson - January 2005

dead trees. I am happy to supply a photo of this event.

Contamination from Drilling and Fraccing Fluids.

Core hole drilling during the exploration process and extraction drilling differs significantly from drilling for water for stock and domestic use. When sinking a water bore in this area, the use of drilling fluids is rare as farmers rely on different drill heads, air and water to sink their wells to levels of less than 80 metres. In contrast, CSG drilling rigs drill to and from depths of over 850 metres through many layers of aquifers using more than 30,000 litres of drilling fluids in the exploration phase.[19] Between 0 – 100% of this drilling fluid is never recovered.[20] These fluids can contain benzene, glycol-ethers, toluene, ethanol and nonlylphenols and other contaminants – all have been linked to health disorders.[21]

In some areas of Colorado, up to 100 million gallons of fluid is used per "frac" job. Some wells require five to ten "frac" jobs per well resulting in elevated methane and chloride levels in groundwater samples.[22]

As of 5th September 2009, the American EPA publically acknowledged the link between drilling fluids and leukaemia, cancer and adrenal tumours.[23] Links have also been made to damage to kidney, immune systems and reproductive development. More recently the Duke report gave a clear indication of the links between fraccing and water contamination.[24]

Contamination from Drilling and Fraccing Fluids and its effect on agriculture.

There is a limited amount of information on the effects of this type of contamination on agriculture in Australia. However in Garfield County, infertility in breeding herds and sterility in bulls increased dramatically. Pigs and cattle stopped cycling and sheep bred on an organic dairy farm had a rash of inexplicable still births. These animals all grazed close to drilling waste pits, where wastewater that included fraccing fluids was misted in the air for evaporation.[25]

In other states of America there are reports of cattle dying after grazing close to CSG wells. Wildlife, such as deer, have developed cancers and tumors after grazing and drinking around supposedly rehabilitated well sites – clear evidence that agriculture and gas mining cannot successfully coexist.[26]

It is essential for the continued production of quality food and fibre in this area that it is kept

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[19] Ralph McIver – Santos Representative – Roadside meeting Blackville 15th September 2009 – Gunnedah Basin NSW.

[20] Boom in gas drilling fluids contamination concerns in Colorado. http:/features.csmonitor.com/environment/2009/02/05/boom-in-gas-drilling-fluids-contamination-concerns-in-Colorado

[21] Boom in gas drilling fluids contamination concerns in Colorado. http:/features.csmonitor.com/environment/2009/02/05/boom-in-gas-drilling-fluids-contamination-concerns-in-Colorado

[22] Geoffrey Thyne – University of Wyoming – Boom in gas drilling fluids contamination concerns in Colorado. http:/features.csmonitor.com/environment/2009/02/05/boom-in-gas-drilling-fluids-contamination-concerns-in-Colorado

[23] http://i2.democracynow.org/2009/9/3/fracking_and_the_environment_natural_gas

[24]

[25] Drill for Natural Gas, Pollute Water – Abrahm Lustgarten and ProPublica

[26] http://www.sierraclub.org/scp/chronicles/episode4.aspx

pollutant free and the food chain is not affected in this way. This would have dire repercussions on our export industry. Meat and Livestock Australia (MLA) to ensure that Australian meat is clean, safe and free from chemical residues asks (Q7): "Do stock have access to leaking transformers, capacitors, hydraulic equipment or coal mine wastes?" They go on to say that carcinogenic PCBs, very persistent industrial chemicals, "have been found in soil below leaking electrical transformers, in the oil leaking from capacitor starts on larger electric motors, **on former coal mining leases and in materials such as coal washery wastes (chitter)** that have been brought on to farms for use as road base of stockyard surfaces". The MLA is well aware that toxic residues should not make their way into the food chain and the resultant effect on our export market.

As some of the proposed methane well sites in this area are located in the headwaters of the Mooki, the contamination of these aquifers will spread to the fertile flood plains below.

Depletion of Aquifers, Consequent Lowering of Water Tables and Creation of Voids Leading to Subsidence.

Extraction of one unit of gas results in thirteen and half units of waste water.[27] With gas extraction, comes the lowering of water tables and the creation of voids. These voids lead to subsidence causing cracking and draining of rivers, waterways and aquifers long after extraction has finished.

"Dewatering coal seams will allow for groundwater migration towards coal seam voids. This has significant potential to effectively dewater sections of the study area. Dewatering of the coal seams will adversely affect the groundwater system and will have a flow on effect of reduced or lost stream flow."[28]

Dewatering will significantly reduce the quantity and quality of available groundwater. Senator Penny Wong, former Federal Minister for Climate Change and Water says "Because pumping (from aquifers) can lead to water moving between different levels of an aquifer, it can cause deteriorating groundwater quality either through changing salinity or composition".[29]

In the Powder River Basin of Wyoming and Montana, the Bureau of Land Management predicted, in their final Environmental Impacts Statement, that development will lower the water levels by 600 to 800 feet over much of the basin. This drawdown can be expected to reach one or two miles outside the productive fields and distances of up to five to ten miles or more during long term production.[30] Potable water supplies will be reduced with significant impact on domestic, stock and commercial irrigation wells.

Coal seam fires are believed to have resulted from fluctuating water levels in gas seams as the underground temperatures rise to ignition level with the extraction of water.[31] They are nearly impossible to extinguish and these types of fires can burn underground for years. This greatly increases greenhouse emissions and contributes to eventual subsidence.

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[27] Environmental Aspects of Coalbed Methane Extraction with Emphasis on Water Treatment and Disposal – L.B. Clarke – for NSW National Parks and Wildlife 2001

[28] Jones T.,2005 (Draft) Report on the Hydrological Investigations Dooralong & Yarramalong Valleys Wyong, Central Coast, NSW January

[29] Gaswatch 65 – Who is out of step here? – HBGAG Group Inc.

[30] Water Issues Associated with Coalbed Methane (Natural Gas) in the Powder River Basin of Wyoming and Montana – University of Wyoming, Laramie and Montana Bureau of Mines and Geology, Billings 2004

[31] Boom in gas drilling fluids contamination concerns in Colorado.
http:/features.csmonitor.com/environment/2009/02/05/boom-in-gas-drilling-fluids-contamination-concerns-in-Colorado

The city of New Orleans, Lousiana is an extreme example of subsidence caused by in part, by the excessive removal of groundwater from the various aquifer/aquitard systems beneath it. New Orleans is now below sea level[32] and this was a major factor for the damage incurred by the cyclone Katrina.

Recently, the National Water Commission has released at position paper advising extreme caution on CSG extraction. Current projections indicate the Australian CSG industry could extract in the order of 7,500 gigalitres of co-produced water from groundwater systems over the next 25 years, equivalent to ~300 gigalitres per year. In comparison, the current total extraction from the Great Artesian Basin is approximately 540 gigalitres per year.[33] These figures do not take into account the drawdown on potable water supplies as outlined in the Environmental Impact Statement for the establishment of the Chinchilla gasfield where the drawdown is expected to be up to 80 – 90 meters with recharge occurring after 125 years.[34]

CSG extraction will result in considerable losses to agriculture as farmers de-stock their land because of reduction to water supplies. Crops, particularly in irrigated areas, will lose their high yielding capabilities. For both dryland and irrigated country where farmers have employed techniques such as satellite navigation subsidence would seriously disrupt innovative farming practices.

Environmental Damage from Establishment of Gas Fields.

There are three main steps in establishing a gas field. They are field development, laying of the gas pipelines and a central processing facility. At the Gloucester Coal Seam Gas Project in NSW, quite a small project, the field development was based on establishing 60 wells linked by polyethylene gathering lines. All well sites required clearing, leveling, access roads, power and water. With 600m spacing this field covered approximately 86 acres. Approximately 98 km of buried high pressure steel pipeline from wells to the compressor station was necessary and will affect 150 landowners. A central processing facility, consisting of up to 6-7 reciprocating compressors of 3000hp, as well as a dehydration unit and water treatment facility were to be constructed(as at February 2008).[35] This type of industrial activity will result in noise pollution, erosion as areas of land are cleared and loss of native habitat. Further damage to the environment will occur with the establishment of kilometres of pipeline and the resulting erosion and noxious weeds.

The gas industry has long hidden behind claims that gas extraction is low impact and has a small footprint. Yet the establishment of the Eastern Star Gasfield in the Pilliga State Forest will result in at least 2410 hectares of native vegetation being cleared – with no assessment of the impact on rainfall of surrounding areas. This figure does not take into account the clearing undertaken for the laying of pipelines along private land and remnant vegetation of Travelling Stock Routes

Gas fields will result in the loss of food producing land and impact upon our climate patterns. Large scale disruption of adjoining land will also occur especially during the establishment process. The impacts on our groundwater may not be realized until years after the gas companies have left the area.

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[32] http://en.wikipedia.org/wiki/Groundwater
[33] http://www.nwc.gov.au/www/html/2959-coal-seam-gas.asp?intSiteID=1
[34] http://qclng.com.au/uploads/docs/eis/appendix/Appendix-3.4-Gas-Field-Groundwater-Report-01.pdf
[35] Gloucester – Coal Seam Project – Project factsheet – March 2008.

Infrastructure.

The amount of gas dictates the location of these sites and wells can be as close as 200mtrs apart. There are high levels of noise, dust, heavy machinery and associated activity. The movement of rig and equipment to and from the proposed drill sites is expected to impact upon the sealed and unsealed roads within the district. The rig mobilization, potentially up to 10 trailer loads may require additional preparation of access.[36] This will result in not only in increased levels of dust and noise pollution, but soil erosion and compaction and loss of native habitat. Existing infrastructure, usually farm to market roads, in isolated country areas simply cannot handle the extra demands of gas exploration and extraction.

The industry is poorly-regulated with little respect shown to the environment or the landholders. Near Broke, in the Hunter Valley, drilling has taken place dangerously close to primary schools and into the main aquifer which provides the town with water. Local council was powerless to intervene.

Gas wells are industrial sites and "consideration should be given to classifying them as industrial chemical sites and as such should be controlled by relevant regulations."[37]

Economic Impacts on Farmers.

Properties in gas field areas in America have been devalued by approximately 22 %. However farmers receive 12% of royalties as well as money derived from the gas companies leasing their land. This represents a considerable income and explains, in part, why the CSG industry was established with so little resistance from landholders in America.

This is in stark contrast to the situation in Australia. Gas companies lease the portion of land on which the gas well is located. Gas companies in Australia "are not in the habit of purchasing large tracts of land"[38] but at times are forced to do so. In Queensland because of landholder resistance and the need to establish infrastructure, over 140,000 hectares of land has been purchased. It is unknown if this land can be returned to agricultural production after this short term industry has moved on. In most other cases, gas companies lease a portion of land which may place some farming families in financial jeopardy as their properties are significantly devalued. Sale of properties would be difficult as few prospective buyers would purchase land in areas located around gas fields. This has been evident in Queensland – with one stock and station agent saying that buyers are simply not interested in purchasing land where there is CSG activity. Farmers then become trapped on the land – unable to sell a significantly devalued property and lacking funds to move on to another lifestyle.

Much has been made of the contribution that mining and potential CSG extraction makes to the economy. For the farmer – and other exporting industries such as the Thoroughbred and wine industry, the high dollar has had a negative effect on these industries making our produce expensive and not attractive to overseas investors and equally unattractive on the domestic market. Much has been published about our patchwork economy. The Australian economy is in recession with the so-called mining boom being the major contributor to our patchwork or "two-stream" economy and other industries suffering the consequences. The fact that our state government has given the gas companies a "five year royalty holiday" from production also questions the real value of the gas industry to the NSW economy.

CSG extraction will result in considerable losses to agriculture as farmers de-stock their land

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[36] Review of Environmental Factors – PEL 452 – Santos for the DPI -

[37] Coal Bed Methane Hazards in New South Wales – CM Atkinson – January 2005

[38] Kathryn Logan – Santos Representative - Blackville Community Consultation – 20th May 2009

because of reduction to water supplies. Crops, particularly in irrigated areas, will lose their high yielding capabilities. For both dryland and irrigated country where farmers have employed techniques such as satellite navigation and have laser leveled their land, subsidence and CSG infrastructure would seriously disrupt these innovative farming practices.

Recently approval was given by the Federal Government for the Gladstone project. It was deemed that wells every 4.46 hectares would be permitted. On the Liverpool Plains with the use of broadacre machinery it is clear that wells, with their accompanying all-weather access roads, sump and waste water ponds would seriously impede upon farmers and their access to land and the ability to achieve the maximum profits from their land. The construction of pipelines is also of major concern – inhibiting farming practices, preventing the movement of heavy machinery especially during key periods such as harvest. In areas prone to bush fires, such pipelines will limit accessibility for controlling these fires

Currently the black soil of the Liverpool Plains, is under the Namoi Catchment Management Plan to control erosion. Farmers have to gain permission for activities such as the construction of levee banks or other infrastructure which interferes with the natural water flows on the Plains. Unfortunately the gas industry is exempt from these long established practices.

Gas leaks, methane and salt scalds, and even well explosions are all part of the methane industry. It should be emphasized that the maximum life of a CSG well is around 30 years and many wells losing productivity in less than a year. This is certainly a horrifying contrast to the quiet, sustainable productivity of the Liverpool Plains where farmers expect to hold their land for generations. As the return to farmers diminishes so does the careful stewardship of the land – with smaller properties being purchased by large corporate bodies or foreign investors who wish to maximize their returns at the expense of the property.

Conclusion.

Clearly the CSG industry will destroy the pristine nature of the Mooki/Namoi Catchment and significantly diminish and contaminate our water supplies. Our productivity will be slashed. Our sustainable long term industry will be destroyed in favour of a short-term opportunistic industry that will leave the environment irreparably damaged. Prime farming country all over Australia is under threat from not only urbanization and foreign ownership but also the extractive industries. Given that there are extensive gas fields in the headwaters of the Murray-Darling Basin in Queensland, similar plans and projections for Narrabri and exploration in the Upper Namoi Catchment, the effects of CSG gas extraction on groundwater in the Murray Darling Basin will be devastating.

It is critical that the Upper Namoi Catchment be preserved for agricultural production and the long term sustainability of the Murray-Darling Basin be protected. We have the opportunity now to preserve agricultural land and save our valuable and essential waterways for future generations from food and water shortages while contributing to the GDP and slowing climate change.