

## Introduction.

This submission will deal with issues which specifically impact upon the farmers of the Liverpool Plains. Areas such as health clearly concern us all but the reality is that there are others far more qualified to make comment. My main areas of response will be those within the Terms of Reference which directly impact upon farmers on the Liverpool Plains, groundwater and the ability to produce food. Some attention will be paid to areas which may be neglected by other submission writers. There are many issues which need to be addressed so this should not be regarded as a finite submission.

## **2. Identify and assess any gaps in the identification and management of risk arising from coal seam gas exploration, assessment and production, particularly as they relate to human health, the environment and water catchments.**

As a member of the Stakeholders Advisory Group and the Namoi Community Network I have been extensively involved in the Namoi Catchment Water Study. I have been alarmed at the claims made by the gas industry that this study has shown little impact upon the water resources of the Namoi Catchment. As farmers we are very concerned about depletion and contamination of water resources. This study was underfunded and has numerous areas where further study is clearly needed. I refer to an interview conducted by our local ABC presenter, Kelly Fuller, with Mark Anderson who was the project leader for Schlumberger – the firm who carried out the study. This interview touches lightly on the shortfalls of this study and also gives an example of some of the areas that should be examined further prior to gas extraction. During this interview<sup>i</sup> Mark Anderson emphasised the need for further study and funding in areas such as connectivity, surface water and water quality.

The study shows that ground water in the hard rock areas in the Gunnedah and Oxley basin management areas which represents a significant portion of the Liverpool Plains is shown to be at **high** risk in scenario three.

*"When populated with mines and CSG, then we get significant depressurisation at depth, causing a flow on affect to shallower hard rock water levels that produces large areas of lowered water levels in excess of the trigger levels of five metres."*

A fall of five metres would impose considerable hardship on our farmers and "make good" plans may fall well short of expectations. Quite simply – how do you repair an aquifer which collapses due to excessive depletion? How do you replace a water supply? The reality is that by the time a farmer employed a solicitor and associated experts to prove that the gas company had caused a loss of his water supply, his/her cattle would be dead.

Given that the Liverpool Plains were formed by volcanic activity it is well known that there are many fault lines, cracks and fissures in the geology of the region which would facilitate the drawdown on potable water supplies, methane migration and probable contamination issues should CSG be extracted. Regional geology, apart from the mention of existence of the still active Hunter Mooki Fault line, were not examined in detail in the study. Drawdown on surface water was also neglected – vertical connectivity is an outstanding issue which needs to be addressed. Furthermore this was a catchment wide study and localised impacts of CSG extraction were not examined.

There is emerging scientific evidence that injecting waste water and associated salts can lead to increased seismic activity.<sup>1</sup> The Liverpool Plains is located on the Hunter – Mooki fault line which is the same fault line as Newcastle. Newcastle of course suffered one of the most damaging earthquakes known to modern Australia some years ago.

### **3. Identify best practice in relation to the management of CSG or similar unconventional gas projects in close proximity to residential properties and urban areas and consider appropriate ways to manage the interface between residences and CSG activity**

Premier O'Farrell recently introduced buffer zones to protect residential areas while failing to consider the impact on the homes of farmers. Clearly farmers live on their properties and their farms are not only their homes but also their place of business. It brings about a notion of farmers' health and enjoyment of their homes as being inferior to our city counterparts. Deputy Premier Mr Stoner acknowledged coal seam gas extraction is "dangerous and will devalue your property." Agricultural land, its contribution and value to society and the role and rights of farmers have been ignored.

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<sup>1</sup> <http://theconversation.com/earthquakes-and-coal-seam-gas-13707>

**Devaluation** resulting from CSG extraction has already occurred on the Liverpool Plains. A property adjoining the Santos pilot production site known as Kahlua, the most advanced development and only pilot production site in this region, failed at auction in July last year. The three registered bidders told the owner that they were uncertain about how the development would impact upon property values, production and lifestyle. While extremely interested in the property, they felt that they could not take the risk of such a large investment.

Many farmers, like most businesses, have a close relationship with banking institutions.

Rabobank, in the recent Senate Inquiry, before the NSW Standing Committee No5, stated “.....CSG activities limit the productive capacity of farming and constrain property values with resultant financial implications for farmers and broader social impacts from declining land values.

*The net impact of coal seam gas extraction on banking relationships may include a diminished production base reducing the ability to service debt and a diminished asset base.”*

Furthermore, John Thomas, CSG expert from the Valuer General’s Department in Queensland confirmed an overall devaluation of properties of 12%.<sup>2</sup> This figure was arrived upon by taking a rough average of between 2% - 12% and was applicable to grazing country only. These figures were established some three years ago and only applied to larger grazing properties in western Queensland. It is important to note here that **never** have CSG companies operated in high quality, closely populated cereal producing areas such as the Liverpool Plains. There are no devaluation figures available for higher value, roughly comparable areas in Queensland such as Cecil Plains.

For councils, this means a substantial drop in their rate base.<sup>3</sup>

Anecdotally we hear of stories of elderly farmers in central Queensland wishing to retire to town for medical reasons and unable to do so as their farms are unsaleable.

**Devaluation** of property will occur in a number of ways. The infrastructure of CSG development will impede on agricultural production. To date, the compensation offered is not an adequate offset to the long term devaluation of the asset.

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<sup>2</sup> Conversation November 2012

<sup>3</sup> <http://www.dailyexaminer.com.au/news/csg-to-cut-property-values/1644228/>

The Liverpool Plains region is made up almost entirely of floodplains. This attached photo of the plains (Flooded Plain.jpg (523KB)) is indicative of how unsuitable the area is for permanent infrastructure.

Santos has told us that wells will be approximately 400 metres apart.<sup>4</sup> It is also an established practise to put these well as close as 200m apart when gas supplies are nearing depletion to extract the most of the resource. These wells will be connected by all weather roads, pipelines and overhead powerlines. Compressor stations and holding ponds will also be necessary.

The Liverpool Plains relies heavily on advanced farming techniques. The soft self-mulching black soils are highly erodible. Farmers have laser-levelled this land to use satellite farming techniques to maximise production and prevent erosion of valuable topsoil. Tree lines have been planted for the same reasons. Clearly the imposition of such infrastructure will impede on a farmer's ability to farm profitably.

An existing pipeline from Moomba to Tamworth on the edge of the Liverpool Plains has resulted in significant erosion problems which have severely impacted upon surface water flows and productive capacity of the immediate area.<sup>5</sup> There have been at least eight pipeline incidents in the immediate area – both on the native pasture of the slopes and the no-till farming country of the plains. The attached photos are a good example of what happens when infrastructure is located on “self-mulching” soils – as the soil turns itself over so the pipeline will “rise” to the surface causing stresses to the pipeline and irreparable damage to surrounding country. Over 2500 tons of rocks were trucked to one of these sites and workers doubt if this will be a permanent repair. As little as 5mls of rain halted repairs on this pipeline on numerous occasions. Initial emergency repairs to this pipeline were undertaken involving the use of helicopters and dropping of sandbags. The local Warrumbungle Shire Council provided the workforce which raised considerable issues as the employment of these people violated Occupational Health and Safety Guidelines. Such is the fragility of the Liverpool Plains soil that the local Catchment Management Authority (CMA), after two years of consultation with farmers and experts, developed a Floodplain Management Plan to establish guidelines for responsible management to prevent erosion.<sup>4</sup>

During the summer period, this area is prone to bushfires. These fires are handled by small local bushfire brigades run by farmers. The massive pipeline explosions, as experienced in the United States would be impossible to control. Many bushfires in the Pilliga especially have raged for days burning vast tracts of land. Although different in terms of vegetation cover, it is relevant that over 185,000ha land was

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<sup>4</sup> Blackville community meeting – October 2008

<sup>5</sup> Attachment – see photos (2) General pics & Tony Windsor's visit 045.jpg (90.8KB) 040.jpg (87.6KB)

burnt out in less than 18 hours – such was the heat and prevailing winds. Paddocks of ripening wheat and barley, during the dry summer seasons, may burn nearly as wildly - endangering not just communities and property but also native flora and fauna. Programmes such as Four Corners have highlighted the leakages associated with pipelines and well heads. This will provide a highly combustible environment as well as severely impact upon farming practises of the Liverpool Plains. It also significant that the United States has had nearly 3000 pipeline “incidents” – some of which resulted in loss of life.

In Queensland gas leaks in pipelines are detected by “flying the pipeline” – helicopters are used to spot leaks indicated by dying vegetation along the pipeline. Pipelines also use venting – gas is released to prevent the build-up of pressure in the pipeline. Such escapes of methane would destroy native vegetation and natural grasses as well as adjacent crops. Saline water collected along the pipeline is also released – again detrimental to crops, grasses and trees.

**Impacts upon Livestock:** There is growing evidence in the USA of impacts upon livestock.<sup>6</sup> Although much of this research is related to shale gas extraction, livestock have been known to abort progeny, have lower levels of fertility and in some cases where drilling and fracking water has been consumed, through spills and migration, this has resulted in death of livestock. There has been no comprehensive research done on the consequences of contaminants entering our food chain. Australia has a good reputation for its clean food supply and our export industry relies on this reputation. Should contaminants be found in meat and livestock export industries, it will be very detrimental to our agricultural trade.

Much has been written about emissions and water depletion and contamination, but clearly as food producers we need a healthy environment to continue production.

#### **4. Explain how the characteristics of the NSW coal seam gas industry compare with the industry nationally and internationally**

There are some significant differences between NSW and eg USA. On a basic level we do not have the luxury of snow fed rivers in Australia should our groundwater supplies be damaged. Furthermore, the aquifer water proposed for use in CSG mining is much higher in salt and other contaminants including radioactive elements. It is extraordinary to think that this industry has been given initial approvals by both

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<sup>6</sup> <http://independentsciencenews.org/health/risk-and-responsibility-farming-food-and-unconventional-gas-drilling/>

governments when the CSG companies have failed to provide an acceptable alternative for the disposal of volumes of water and associated waste products such as salt.

Much has been written about the emergence of USA shale gas into world markets. Australia has a high cost structure and a history of cost blowouts and delays. We do not have a comparable infrastructure. The CSG industry relies on multiple well holes whereas shale gas extraction does not need multiple well holes. Australia also has a history of community resistance whereas Americans welcomed the gas industry believing that they would be the recipients of large royalties, were acting in the public good and little or no knowledge on impacts on water supplies. It was in fact the ranchers of the Powder River Valley in Wyoming who demanded studies into the impacts of CSG extraction on underground water supplies.

The Queensland gas industry is an excellent example of poor monitoring, rushed approvals and irresponsible development. Of interest is that the majority of country in Queensland is held by a 99 year old lease arrangement whereas in NSW farmers have freehold rights.

## **5. Inspect and monitor current drilling activities including water extraction, hydraulic fracturing and aquifer protection techniques.**

The spills and contamination issues in the Pilliga State Forest by both Santos and Eastern Star gas point to a lack of monitoring and a failure of the self reporting and self-regulation required by Government. The basic construction of wells cannot guarantee that these wells will maintain their integrity for life. The companies only accept responsibility for well integrity for the “life of the project.” Schlumberger, recognised as world’s leading extraction company, regards the failure of 6% of all wells within the first 15 years as unacceptable and a challenge to the industry.<sup>7</sup> Clearly the escape of methane is detrimental to the financial success of projects. It is in the best interests of the company to capture and harvest as much CSG as possible. Schlumberger has also concluded that wells cannot maintain their integrity without continuous maintenance. In a volatile geological environment such as the Liverpool Plains, this is an ongoing expense for future generations ultimately falling to the taxpayers. The environmental issues – particularly water/aquifer management will be an ongoing burden.

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<sup>7</sup> [http://www.slb.com/~media/Files/resources/oilfield\\_review/ors03/aut03/composite.ashx](http://www.slb.com/~media/Files/resources/oilfield_review/ors03/aut03/composite.ashx)

## **Subsidence.**

I particularly welcome further research into subsidence issues. Subsidence can occur by up to 13% of the soil profile.<sup>8</sup> It has been difficult to find studies to support this figure so further research is urgently needed. Advances in farming such as GPS navigation make subsidence issues increasingly important.

## **Conclusion.**

It is clear that there are many issues associated with CSG extraction and far too many unknowns. There is no evidence that the CSG industry will add to the value of the Liverpool Plains community or the productivity of the Liverpool Plains and its underlying water supplies. There is plenty of evidence to suggest that this industry is harmful and counter-productive to areas such as ours and indeed the risks, until proven otherwise are extreme. The CSG industry presents significant risks and is an opportunistic short term industry. The perceived advantages appear to benefit shareholders in an industry which is becoming increasingly foreign owned. This region should not be sacrificed or used as a guinea pig for an industry which claims that “adaptive management” is one of its strengths.

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<sup>8</sup> This figure I cannot accurately verify but believe I learnt this at a mining conference.