
8th September 2011

**Submission to the Rural Affairs and Transport References Committee
Inquiry into Management of the Murray Darling Basin
Impact of mining coal seam gas.**

This submission was made to the NSW Legislative Council Inquiry into of Coal Seam Gas. Following that submission I met with the Hon Bob Baldwin MP, Federal Member for Paterson. The issues I raised in the submission to the NSW Inquiry have broad applicability in relation to coal seam gas, so I am pleased to have the opportunity of making this submission to your Inquiry also. Thank you for allowing me this opportunity.

I became aware of the coal seam gas industry very recently when it became known that a CSG exploration company, Pangaea Resources Pty Ltd, was approaching people individually, seeking access to their properties for exploration. No community notifications had been given by Pangaea re its intentions. My concern was heightened when I saw the misinformation that was being presented by Pangaea to the people whom it approached. Upon investigation I have discovered that Pangaea hold PEL476. The Myall catchment is in the south-east portion of PEL476. I was a signatory on a recent submission by the United Myall Residents Against Gas Extraction. This is now my personal submission containing additional comments and recommendations.

I urge the NSW Government to adopt the “Precautionary Principle” in all of its actions in relation to coal seam gas. There is still considerable debate around the world about the coal seam gas industry so this is not the time for Australia to experiment and hope for the best. Proper research must be done BY INDEPENDENT RESEARCHERS, NOT BY THE MINING COMPANIES, to ensure that there are NO long term consequences to the environment or to public health. In any area where there is doubt, the “Precautionary Principle” must apply!

Please understand also that there are widespread concerns among the community in general. Unless these concerns are tackled so that there is proper participation by the community AND justice in terms of compensation for the impact of the coal seam gas mining, there will be increasing levels of alarm in NSW. Individual property owners need to be involved in the detailed planning of any coal seam gas activities that affect their properties.

In the lead-up to the last election, the NSW Liberals and Nationals committed in their Strategic Regional Land Use document, to prepare Strategic Land Use Plans for the whole state. The document acknowledges that *“agricultural land and other sensitive areas exist in NSW where mining and coal seam gas extraction should not occur”*. These strategic land use plans *“will set the framework within which future development will be assessed”*.

I am concerned to find that the most recent statements by the NSW Government in relation to these Strategic Land Use Plans have omitted the reference to “other sensitive areas”. The catchment for the Myall Lakes, a Ramsar listed site of international significance, is just such a sensitive area. No activities should be permitted within the catchment of the Myall Lakes that have any possibility, however remote, of endangering this unique wetland. The Ramsar Information Sheet (RIS) for the Myall Lakes states that *“The Myall Lakes wetlands are significant because they cover an extensive area and are in relatively near-natural condition”*. The RIS also records that *“The Myall Lakes wetlands have a high social and cultural value”*. The main input of fresh water to the Myall Lakes system is from the Myall and Crawford Rivers which extend into the Myall catchment that is now part of this PEL476. The Crawford River also is the town water supply for Bulahdelah.

The Myall Lakes only exist in their current relatively pristine state now because of the actions taken to prevent mining several decades ago. The same is true of Australia's Great Barrier Reef where there was a high profile public campaign for several years (late 1960s and early 1970s) before the creation of the Great Barrier Reef Marine Park finally removed the threat of mining and oil exploration. Now we have yet another mining challenge to an irreplaceable part of Australia's environment. We now need to establish proper legislation so that the citizens of NSW do not need to keep fighting this battle year after year.

I summarise my recommendations as follows:

1. There should be a total moratorium on all CSG activities within the Myall catchment until the Strategic Regional Land Use Plan has been prepared for this area. I believe that the Myall area is not one of the areas designated for priority preparation of the Strategic Regional Land Use Plan so it may be some time before this plan is finished.
2. The NSW Government should develop a comprehensive planning, assessment and management program in relation to coal seam gas, so that environmental, health and social concerns are addressed properly and transparently.
3. The NSW Government should develop comprehensive legislation to address property owners' rights in relation to coal seam gas activities.
4. The NSW Government should structure its decision making in relation to coal seam gas to avoid conflicts of interest between those ministers granting approvals and receiving the revenue and those ministers whose role is to protect the environment, health and social well-being.
5. The NSW Government (and the Australian Government) should investigate the whole life-cycle carbon cost of CSG to properly determine whether CSG will aggravate or ameliorate global warming.
6. The NSW Government should review CSG royalties to ensure a just return to the people of NSW.
7. The NSW Government should review, taking into account the potential risks of CSG extraction, whether CSG production should be expanded to provide for significant volumes of gas to be exported.

The remaining sections of this document set out in more detail our specific concerns and recommendations as follows:

The environmental and health impact of CSG activities.

The economic and social implications of CSG activities.

The role of CSG in meeting the future energy needs of NSW.

The interaction of the Act with other legislation and regulations.

The impact similar industries have had in other jurisdictions.

I would be delighted to meet with you and answer any questions if so desired. I do believe that with proper planning now, the Government can avoid the very large potential problems associated with the continued growth of the CSG industry. Without this planning, coal seam gas will be a running sore for the NSW Government for a long time to come.

Yours faithfully

Charlie Shuetrim AM

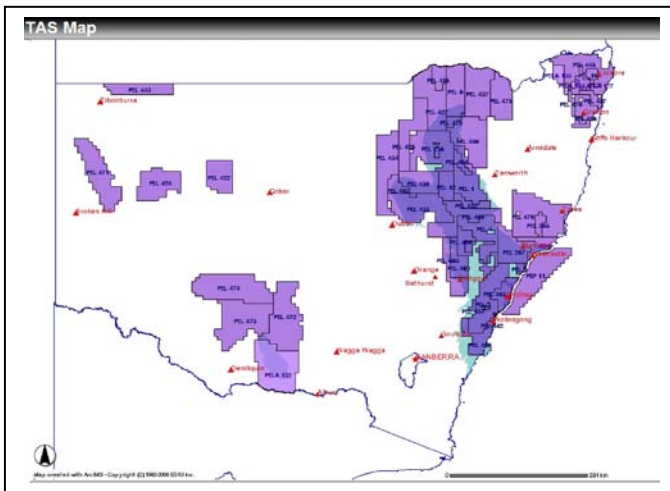
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ENVIRONMENTAL AND HEALTH IMPACT OF CSG ACTIVITIES

This is the principal area where I urge the Government to adopt the “*Precautionary Principle*”. The mining companies are pushing aggressively and the Government is clearly supporting them. Last week-end (4th September) there was a report in the *Sun Herald* that “*the government will seek greater investment from mining companies to dig into ‘under-explored’ areas of NSW*”. The mining companies are also embarking on a major advertising campaign because they are now realizing the extent of public unrest about their behaviour.

The diagram on the left below, shows the extent of petroleum applications and titles in NSW at this moment (<http://www.dpi.nsw.gov.au/minerals/titles/online-services/tasmap>).

The applications and titles correspond closely with the right-hand diagram of principal sedimentary basins in NSW (<http://www.dpi.nsw.gov.au/minerals/resources/petroleum/map>). These basins are the areas where coal seam gas is likely to be found. The majority of sedimentary basins in the eastern portion of NSW are already covered by petroleum applications and titles. **I recommend that all government actions in relation to coal seam gas must apply to these existing applications and titles as well as to new applications and titles granted in the future.**



THE ASSESSMENT AND DETERMINATION PROCESS

I recommend that the Government structure its decision making in relation to coal seam gas to avoid conflicts of interest between those ministers granting approvals and receiving the revenue and those ministers whose role is to protect the environment, health and social wellbeing. This is even more vital right now as companies that have paid many millions of dollars up front for their licences will expect to be able to pursue their exploration activities with great vigour. These companies are not noted for their track record of concern or consideration for the environment, health and social welfare.

A key part of the decision-making process in relation to coal seam gas is the preparation of various reports to enable the assessment of any likely impacts on the environment, property owners, community infrastructure and so on. **I recommend that the Government use independent consultants, funded by an appropriate fee structure imposed on the CSG companies, to prepare all such reports. I further recommend that all data provided by the CSG companies to the independent consultants be available in the public domain.** Reports produced by consultants who have been hired and paid by the CSG companies can readily be slanted to read well and to cloud or hide important issues. Consultants working in this way will inevitably have a loyalty and bias to the companies that are paying them. I have read a number of these reports in the course of researching the issue of coal seam gas and it is very clear that in many areas these companies are just ticking boxes.

A further significant issue in relation to this assessment process, is the relative lack of independent expert resources. This is a new industry in Australia and the volume of proposed exploration and mining will place great strain on the technical resources. **I recommend that the Government take urgent steps to address this problem as we cannot rely on the mining companies to produce honest assessments that will protect the environment and the rights of individuals.**

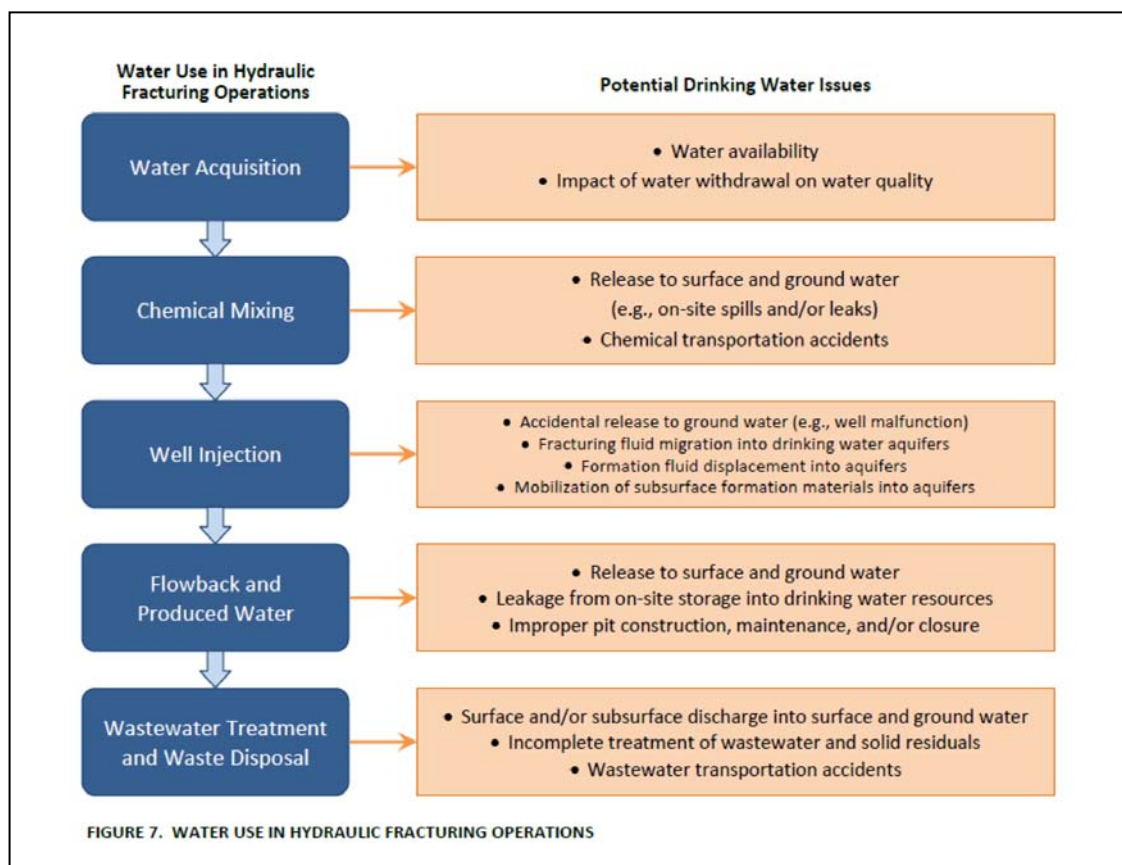
The CSG companies have demonstrated in many situations already that their objective is to conceal their intentions. For example the document distributed by Pangaea Resources to the individuals whom it has approached in the Myall catchment contains the following statements:

“Coal seam gas (CSG) has absolutely nothing to do with any mining operations, coal or otherwise”.

“Any fracking that is done in Australia...uses only ‘household chemicals’ like swimming pool chemicals and sand”.

EFFECT ON GROUND AND SURFACE WATER SYSTEMS

Coal seam gas is involved with water in multiple ways. The following diagram, taken from the US Environmental Protection Agency Draft Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources, illustrates how CSG uses and interacts with water (this study includes CSG as well as shale gas in the USA as CSG extraction almost always requires hydraulic fracturing). IF CSG mining and hydraulic fracturing are always harmless to the environment and health, why is the US EPA conducting this study?



The Australian National Water Commission (NWC) in its Position Statement on CSG in December 2010, said:

“Potential impacts of CSG developments, particularly the cumulative effects of multiple projects, are not well understood”.

The CSG industry *“risks having significant, long term and adverse impacts on adjacent surface and groundwater systems”.*

Further, in its 2009 publication Groundwater Surface Water Connectivity, the National Water Commission says: (<http://www.nwc.gov.au/www/html/178-groundwater-surface-water-connectivity.asp>)

“The Commission considers that unless and until it can be demonstrated otherwise, surface water and groundwater resources should be assumed to be connected...This is the reverse of the current situation”.

The position of the scientists is clear – the impacts of CSG on water systems are not well known. Therefore the “Precautionary Principle” must apply. The fact that the US EPA is undertaking the major study on the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources further confirms the lack of scientific understanding and agreement on gas mining.

The NSW Government has described the banning of BTEX chemicals in the drilling process as *“part of the tough new conditions for coal and coal seam gas”* (Minister Hartcher Press Release 21st July 2011). This completely ignores the fact that these compounds occur naturally within the coal seam and this ban does nothing to prevent these compounds from coming to the surface, seeping into the groundwater or from accidentally contaminating surrounding areas through spillages of produced water. The pH of the produced water also needs to be considered as increased acidity can result in the increased mobility of heavy metals and other compounds brought up from the coal seam.

The moratorium on fracking until 31st December, 2011 (included in Minister Hartcher’s press release referenced above) does not seem to be an adequate interim measure given that this Legislative Council Inquiry is not due to report until 6th April, 2012.

Most of the water flowing into the Myall Lakes comes from the Myall and Crawford Rivers within the Myall catchment. **I therefore recommend that no CSG activities be conducted in this area until such time as there is general agreement in the scientific community as to the impacts of CSG on ground and surface water systems. I also recommend that there should be an in-depth study (by independent experts) of water systems within the Myall catchment before any consideration is given to CSG activities within this area.**

Most importantly, I further recommend that no CSG activities should be permitted within 500 metres of any National Park, Environmental Protection Zone in an environmental planning instrument, lands protected under SEPP 14 (coastal wetlands) and SEPP 26 (littoral rainforests), land protected under a conservation agreement, wilderness areas, aquatic reserves, Ramsar wetlands, rivers and state forests.

EFFECTS RELATED TO THE USE OF CHEMICALS

Contrary to the claim of Pangaea Resources that *“any fracking that is done in Australia...uses only ‘household chemicals’ like swimming pool chemicals and sand”* it is well documented that hundreds of chemicals are used in this process. Further, many of those chemicals have not been tested properly in terms of their potential impacts on environmental and human health. CSG companies are reluctant to disclose which chemicals they use, claiming this to be proprietary knowledge.

Human health relies on having clean, safe drinking water and unpolluted air. Coal seam mining must not be allowed to endanger these basic health needs of Australians. The submission by Doctors for the Environment Australia to the Senate Enquiry into the management of the Murray Darling Basin - Impact of Mining Coal Seam Gas, sets out in much more detail the potential hazards of chemicals. I commend this report to the NSW Legislative Council Inquiry (<http://dea.org.au/resources/submissions>).

The other major factor relating to the use of chemicals and the chemicals that result from the coal seam gas mining process, is the fallibility of human beings. Almost daily, I read newspaper reports of spillages or other dangerous occurrences. The recent Orica disaster in Newcastle is but one example. Additionally, the companies themselves cannot always be relied upon to respond rapidly and honestly to such situations. There are numerous documented occurrences of toxic water being released onto adjacent land contrary to their approved rules for operation. Regardless of the pontifications of the mining companies, these things continue to happen. The only problem with coal seam gas mining is that human fallibility can result in very long term impacts on groundwater, far from the site of the well.

I recommend as follows:

- 1. CSG companies must disclose the chemicals to be used in drilling and fracking.**
- 2. All chemicals to be used must be registered by the Australian Pesticides and Veterinary Medicines Authority (APVMA) for use in fracking and be subject to proper testing by independent experts before being approved for use in NSW.**
- 3. Any proposed use of chemicals must be assessed for each well on each occasion when the chemicals are to be used, such assessment to be by the independent expert process referred to above.**
- 4. There should be strict monitoring of mining company operations and there should be severe penalties for any breaches – penalties sufficient to convince even these wealthy companies that they must obey the letter of the law.**
- 5. The government should develop a rapid response team of experts to gather information and recommend appropriate remedial actions at each site where problems are identified.**

Pending implementation of the above recommendations, the “*Precautionary Principle*” must apply and CSG companies must not be permitted to use these chemicals.

EFFECTS OF HYDRAULIC FRACTURING

My comments above cover this subject. Hydraulic fracturing increases the potential for the escape of chemicals and contaminated water.

Note also the 2011 report from the Tyndall Centre for Climate Change Research in the UK states in relation to hydraulic fracturing for shale gas (and the same applies to coal seam gas):

(http://www.tyndall.ac.uk/sites/default/files/tyndall-coop_shale_gas_report_final.pdf)

“Altogether, the toxicity profile of the flowback fluid is likely to be of greater concern than that of the fracturing fluid itself, and is likely to be considered as hazardous waste in the UK”.

Depending on the geology of the location, the mini earthquake triggered by the hydraulic fracturing can cause damage to the well itself with resultant significant contamination due to leaking chemicals and toxic water. Wells can be fraced multiple times thereby increasing the potential for structural damage to the well. **I recommend that each well should be assessed prior to each fracking and this assessment should include an examination of the possibility of such damage.**

NATURE AND EFFECTIVENESS OF REMEDIATION REQUIRED UNDER THE ACT

Remediation envisaged under the existing Act talks about leveling, regrassing, reforesting etc. This ignores the significant problems created by CSG mining.

There are many situations where remediation is just not possible or will take a long time. When contamination does occur, a typical response is to shut down the well. What good does that do if the contamination has occurred already? Another factor is for how long has the contamination been occurring. A spokesperson for the Australian Petroleum Production and Exploration Association said recently (see report in Sydney Morning Herald – 3rd August 2011) that "*good management could minimise the risks of water contamination, but never eliminate them*". "*Drilling will, to varying degrees, impact on adjoining aquifers,*" said the spokesman, "*The extent of impact and whether the impact can be managed is the question.*"

This simply reinforces my earlier point about the training and experience of the people who are actually doing the work.

There is plenty of evidence from "Superfund Sites" in the USA (these are sites listed by the US EPA as polluted locations requiring long-term response to clean up hazardous material contamination) that contamination of aquifers travels a long way and is virtually irreparable except by dilution over generations. Unlike mining, CSG contamination will be far from a localised impact. This is exacerbated because the field of CSG wells covers a large area. Each well can in turn cause contamination.

What happens if CSG companies destroy large swathes of mature forest for their activities? The Pangaea representative, upon meeting one of the local residents at Bulahdelah, indicated that they wanted to conduct their exploration activities up over the adjacent mountain range that is part of the property. This is a heavily timbered area – trees that are very old. The Pangaea representative unblushingly informed the property owner that they would have no trouble going up the steep hill, they would just put a bulldozer through the forest. How and how long will it take to remediate this wanton destruction?

Land clearing in rural areas is regulated under the *Native Vegetation Act 2003* by requiring most clearing to be authorised under either a development consent or a property vegetation plan. However under current rules the **Minister responsible for mining** makes the determination in relation to the review of environmental factors that is **prepared by the mining company** prior to the granting or renewal of a title (http://www.dpi.nsw.gov.au/minerals/environment/pgf_guideline_document_ESB18). This is akin to placing the fox in charge of the hen house.

I recommend that CSG companies not be permitted access to any natural bushland area where the clearing or destruction of that area would otherwise be prohibited under other federal, state or local government planning laws and regulations. Furthermore, the minister responsible for the environment should be the person to make these determinations.

EFFECT ON GREENHOUSE GAS AND OTHER EMISSIONS

The entire rationale for coal seam gas has been that its combustion produces less carbon dioxide than coal. But this is not a valid comparison. Professor Robert Howarth from Cornell University in his research on the life-cycle carbon cost of CSG¹, which includes fugitive emissions of methane, estimates that over a 20 year period, CSG produces at least as much carbon as coal and potentially much more. Such is the level of concern from scientists in the USA that the Council of Scientific Society Presidents wrote to President Obama in 2010 warning that some potential energy bridges such as shale gas have received insufficient analysis and may aggravate rather than mitigate global warming. The same applies to coal seam gas!

¹Howarth RW et al (2011) Methane and greenhouse gas footprint of natural gas from shale formations
Climatic Change Letters DOI 10.1007/s 10584-011-0061-5

Methane is a far more potent greenhouse gas than carbon dioxide and it is the “fugitive emissions” that cause concern. These escape into the atmosphere during the production process (flaring, drilling, fracking) and due to losses from the transmission pipelines. The ABS estimates transmission losses for natural gas over 2001-02² at 1.5% of all piped natural gas. Howarth estimates that between 3.6% and 7.9% of the methane from shale gas production escapes to the atmosphere over the lifetime of a well.

I urge the Inquiry to note that it is the scientists who are raising these questions about coal seam gas. Again, I make the point that the science is not clear. **Therefore I recommend strongly that Australia should adopt the “Precautionary Principle” in all circumstances where there is any doubt whatsoever about the impacts of proposed coal seam gas mining.**

To underline my recommendation re the *Precautionary Principle*, a recent program on ABC Radio concluded with the summary: “Many scientists believe coal seam gas extraction should proceed, but cautiously and with far greater government intervention in research, monitoring and regulation”.

(<http://www.abc.net.au/news/2011-08-30/scientists-issue-warning-on-coal-seam-gas/2861424/?site=sydney>)

BENCHMARKING

I suggest that benchmarking will be a key element in the ability to determine the impacts of coal seam gas mining. I believe that it is the responsibility of the mining companies to ensure that they are not causing problems to the environment or to the people living in the areas where they are operating. **I recommend that benchmarking of water quality, air quality, health and other parameters take place before coal seam gas exploration activities commence. This benchmarking should be conducted by independent authorities and paid for via a fee structure levied on the coal seam gas companies. The mining companies must henceforth ensure that they are able to meet the same benchmarks while their operations are continuing.**

It is naive for CSG companies suggest to people that air conditioning, double glazing and insulation will solve the problems caused by 24 hour drilling only 200 metres from the house. People wish to continue to live as they were before. They are not collateral damage (see reference to this on the next page). They want fresh air and windows open to hear the birds - not to have an artificial cocooned atmosphere imposed on them because the mining companies will not accept the responsibility for their actions.

²Australian Bureau of Statistics Energy Statistics Australia 2001-2002 4648.0.55.001

ECONOMIC AND SOCIAL IMPLICATIONS OF CSG ACTIVITIES

LEGAL RIGHTS OF PROPERTY OWNERS AND EFFECTS ON PROPERTY VALUES

Communication with property owners

This is an area that requires urgent attention. Property owners are not notified of exploration licences granted over their properties. Most rural property owners do not have the knowledge, finances or experience to deal with the CSG companies. This situation is exacerbated by the preferred approach of the CSG companies to divide and conquer. They seek to deal only with individuals, they give misleading information and generally seek to avoid proper community outreach.

To exemplify the attitude of the mining companies, here is a reported exchange that took place very recently in Queensland (<http://coalseamgasnews.org/?p=2056>):

The vice-president of one of Australia's biggest coal seam gas companies has reportedly told a resident of a rural residential estate being targeted for gas wells by his company that his community would be 'collateral damage.' Brett Smith, senior vice-president in the BG Group that owns QGC, was meeting Michael Bretherick, a resident of the Tara residential estate and a member of the Western Downs Alliance, along with others from the company and from the state government.

Michael Bretherick suggested that, if the company were to take the initiative by ceasing their operations within the Tara estates, begin working on addressing earlier impacts upon residents and the local environment, with emphasis on air quality, noise monitoring, soil and water testing, this would avoid confrontation and defuse an already stressful situation.

Mr. Smith replied to this that there would be no moratorium and no buy-outs, no relocation of impacted residents and no cessation of existing operations such as seismic work. Then Mr. Smith reportedly added, "With a project of this size there will be some collateral damage."

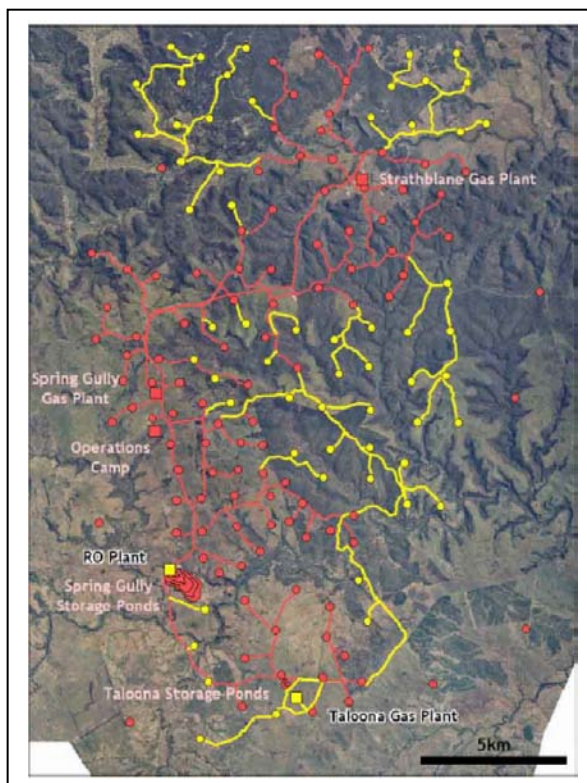
This meeting took place at Mr. Bretherick's place on the Tara residential estate on Wednesday 31 August.

COMMUNITY CONSULTATION

Pangaea Resources claims that it "*has a strong record of providing public information, cooperation with local land holders and environmental protection*". This is untrue. There has been no public information given to local land holders within the Myall catchment. All approaches by Pangaea have been to individual land holders accompanied by grossly misleading information.

One claim by Pangaea is that its "*preferred approach or model for development involves the use of horizontal wells which can be located up to 4km apart*". I acknowledge that this is technically possible but an examination of existing CSG within Australia has not demonstrated the widespread use of this approach. The trade-off if it is used, is much more heavy industrial activity per pad in which case the potential negative environmental effects of the drilling operations may pale in comparison to those of the surface operations. If this approach is not used, then the result can be a grid of closely spaced wells. Depending upon the company and the geology, the grid pattern can have wells every 400 metres.

A diagram from Origin Energy, showing the Spring Gully gas field in Queensland, demonstrates how gas wells can litter the landscape. I wonder how much of this information was presented to the community and to individual property owners before the commencement of exploration activities.



Property values

A further problem is that the current legislation gives no recognition to the effect of CSG mining on property values. This is NOT one of the effects for which compensation is payable yet experience in Queensland indicates a dramatic impact on property values – in fact it is questionable whether properties with gas wells are even saleable. Until this issue is resolved it is only natural that there will be great resistance from all property owners approached by coal seam gas companies.

Noise, dust, vibration and light pollution taking away from property owner amenity

CSG mining involves heavy industrial activity – drilling, heavy vehicle movements, light pollution and so on. Current legislation allows this to occur as close as 200 metres from a property owner's residence.

The legislation also permits the drilling rig to operate within 50 metres of a garden, vineyard or orchard. Putting it mildly, this is unacceptable and must result in significant health problems for any property owners subject to such interference.

As referenced above, the mining companies think that double glazing, air conditioning and insulation will solve this problem. How inappropriate is that? Again this is an area that must be tackled by the government to ensure that the coal seam gas companies are responsible for their own actions and are not creating any impacts at all on nearby properties. They should be isolating and insulating their operating areas and preventing any disturbance to the areas around them.

The picture below displays a drilling rig owned by Origin Energy. I would ask you to visualise this drilling rig, operating 24 hours a day within 200 metres of your home.

Project Delivery
CSG Drilling Technology - MDC 152 Automated Drilling Rig



- Multi purpose
 - CSG and Conventional wells to 2500m
 - Water based mud or underbalanced
 - Can core, cavitate, frac or undertake other workover activities in the event that of a slow down in drilling requirements
- Hydraulic Top Drive
- Hydraulic Pipe Arm
- Pipe Tubs
- BOP trolley operated and stored and transported on doghouse skid
- BOP hydraulic lifting rams
- Bulk oil storage container
- Seal - O - Grips replacing flanges
- Cellar pump for surface hole
- Foldup hydraulic walkways
- Quick connect hydraulic couplings



38

The image below is displayed on the NSW Department of Primary Industries website. It shows a drilling rig in the Hunter Valley, operating at night. Picture this operating 200 metres from the bedroom.



I recommend as follows:

1. All property owners affected by CSG mining must be compensated for any resulting drop in the value of their properties. An independent entity should be responsible for determining realistic compensation entitlements.
2. CSG companies must be required to document and present to the community as a whole, their detailed long term plans for the development of CSG within their exploration area. To prevent the companies from glossing over their full intentions, they should be prohibited from any future activities that are not described adequately in this initial documentation. The legislation needs teeth!
3. The perimeter of compounds established for the purpose of drilling wells must be at least 500 metres from any residence, garden, orchard or vineyard.
4. Noise, dust and light pollution (including that from flaring) must not exceed benchmark levels established for the location prior to the commencement of drilling. i.e. There must be NO impact on the property owner resulting from the drilling and associated activities.
5. CSG companies must be required to state in advance the anticipated number of heavy vehicle movements that will be required if the gas field enters production. They should not, in the future, be permitted to exceed the number of movements stated. This is another area where consultants paid by the CSG companies can easily gloss over the true likely facts so there needs to be a major disincentive for this to happen. Equally the community and the local government authorities need to know in advance just how much traffic will be generated and the resulting impacts.
6. CSG companies must pay for infrastructure upgrades (e.g. to roads, bridges, electricity) that will be required because of their activities and such upgrades must be completed before they commence their activities.

FOOD SECURITY AND AGRICULTURAL ACTIVITY

I have read numerous articles that raise the issue of food security versus CSG. This is an issue that needs to be taken into account by the government. It should be studied and the results of the study published.

I recommend that the government adopt a long-term view when preparing the Strategic Land Use Plans.

REGIONAL DEVELOPMENT, INVESTMENT AND EMPLOYMENT

This is a significant issue within the Myall catchment and indeed the whole area of PEL476. The Myall catchment is a significant generator of tourism and the resulting employment. It is important that CSG mining does not affect these areas.

ROYALTIES PAYABLE TO THE STATE

I am horrified at the royalty arrangements that have been established for coal seam gas production in NSW. For the first five years of production, no royalties are payable. In year 6 they are 6%, then rise by 1% per annum until year 10, from which time they continue at 10%. This is giving the farm away and has at the same time created an unseemly rush for CSG exploration and mining. Witness the fact that most of the likely CSG gas areas in NSW already have applications and titles over them.

I recommend that royalties for CSG be set at a level that allows mining companies to earn a reasonable profit, but not a super profit. Super profits, if they exist, belong to the people of NSW, not the company that was fastest out of the blocks to get the exploration licence. The government must not allow mining company propaganda or bluff to influence its determination to receive a proper level of royalties from CSG mining.

LOCAL GOVERNMENT

At the moment, local government has no influence on CSG mining activities. Local planning laws do not apply. Indeed, even if a rural property has a conservation agreement with the NSW Government, that does not preclude mining within the area of the conservation agreement.

Similarly, local government is not an integral part of the planning process in respect of traffic and other demands resulting from CSG mining.

I recommend that CSG exploration and mining within NSW must take into account local government zonings, infrastructure requirements and traffic planning.

THE ROLE OF CSG IN MEETING THE FUTURE ENERGY NEEDS OF NSW

THE NATURE AND EXTENT OF CSG DEMAND AND SUPPLY

The question is what are we trying to achieve? The government talks about the need for gas to be used in NSW, however I understand from data provided by the Australian Industry Group³ that most of the gas produced in NSW will be targeted for export. Given the significant environmental, health and social implications of CSG mining, why should we expose the people of NSW to these major threats purely so that mining companies can earn large profits from their exports?

I recommend that any CSG produced should be for use solely within Australia.

RELATIVE WHOLE OF LIFE-CYCLE EMISSION INTENSITY OF CSG

This is a significant concern re coal seam gas. I have commented above on the research by Professor Howarth at Cornell University. This suggests that coal seam gas has the potential to aggravate global warming rather than to mitigate it.

I recommend that the government delay any decision on the widespread use of CSG for the future energy needs of NSW until this issue has been investigated thoroughly.

I recommend also that, as a matter of urgency, the Government should seek to develop and implement technologies that do NOT use fossil fuels.

³AIG (2011) Energy shock: confronting higher prices. *Australian Industry Group*. Accessed online at http://www.aigroup.com.au/portal/binary/com.epicentric.contentmanagement.servlet.ContentDeliveryServlet/LIVE_CO NTENT/Publications/Reports/2011/Energy_shock_confronting_higher_prices.pdf on 18th March 2011.

THE INTERACTION OF THE ACT WITH OTHER LEGISLATION AND REGULATIONS

At the moment, the NSW Petroleum (Onshore) Act 1991 is in major conflict with just about all other legislation and regulations governing the protection of the environment and health. A number of instances have been referenced above.

I recommend that the NSW Government re-write the act to ensure that it works in conjunction with other legislation covering the protection of the environment and health and property owners' property and compensation rights.

Until this legal conflict is resolved, the mining companies will continue to use the legislation to their advantage. This will only lead to continued and growing agitation and conflict between the community, the mining companies and the government. No-one will win in this situation. Putting it simply, the coal seam gas issue will continue to be front page news and ultimately the people will make their feelings known at the polls.

THE IMPACT SIMILAR INDUSTRIES HAVE HAD IN OTHER JURISDICTIONS

It is clear that coal seam gas and shale gas (which uses similar technologies) are the subject of much concern around the world. France, the UK, South Africa, the USA and Canada have all imposed bans in certain regions in relation to hydraulic fracturing.

The US Environmental Protection Agency is funding a large study on the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources.

Despite all of the above, the mining companies here assure us that they know what they are doing and it is all safe. The behavior of large multi-national mining and petroleum companies has not engendered trust in their actions. They are seldom up front with their knowledge, information and financial dealings and there is a long history of environmental damage in areas where supposedly, there were sufficient protections in the rules of operation to prevent such damage. The *Exxon Valdez*, the Gulf of Mexico oil catastrophe and the Montara Wellhead in Western Australia are all examples of disasters where theoretically there was a set of rules to prevent such occurrences.

Dr. Sylvia Earle, one of the world's foremost marine experts and an authority on marine life in the Gulf of Mexico, stated in her testimony to the US House of Representatives Inquiry into the impacts of the Gulf of Mexico oil spill:

"While yielding to the pressure to extract golden eggs from the golden Gulf, we have failed to take care of the Gulf itself".

Coal seam gas mining in Australia presents identical challenges. We must ensure that we preserve the environmental, health and social fabric of Australia while benefiting from the coal seam gas. If we fail to do so, future generations will pay the penalty.