Submission No 156

INQUIRY INTO COAL SEAM GAS

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To Whom it May Concern

I would like to make a submission to the General Purpose Standing Committee No. 5 inquiring into the environmental, economic and social impacts of coal seam gas (CSG) activities, including exploration and commercial extraction activities, allowable under the NSW Petroleum (Onshore) Act 1991 (the Act).

Before addressing the terms of reference individually, I would like to summarise by stating in the strongest possible terms that we believe there should be:

1. A full moratorium on all forms of coal seam gas drilling until the environmental, social and health impacts have been rigorously and **independently** assessed. All members of assessment board or committee should have absolutely NO vested interest either politically or financially in the mining or extraction industries. This includes MPs who by their very nature will tend to economic expediency rather than social impact and rights of individuals.

2. Landholders should be allowed to refuse consent for coal seam gas exploration or production on their land under the Petroleum (Onshore) Act and/or any other acts or laws governing right of entry to private property. Landholder permission notwithstanding there should be a total ban on coal seam gas exploration and mining in important bushland such as the World Heritage listed areas of Northern NSW and surrounds, valuable farmland, groundwater aquifers, residential areas and public lands

3. Coal seam gas exploration and mining to be made subject to all relevant environmental legislation, including the native vegetation and water management laws and there should be provision of standing to ensure that the community has full legal rights to challenge and enforce environmental laws under which coal seam gas companies are operating.

4. A requirement that all chemicals used in coal seam gas drilling or fracking must be assessed by the chemical regulator for use for that purpose before being approved for use and that independent testing be made on a regular basis to ensure that only approved chemicals are being used on an on-going basis.

Regards,

Tracy (and Clive) Parker
Hillcrest Mountain View Retreat

Terms of Reference:

1. The environmental and health impact of CSG activities including the:

a. Effect on ground and surface water systems:

CSG mining represents a serious threat to water resources as it not only uses vast quantities of ground water in the actual process, but produces waste or "reclaimed" water. This represents a serious environmental risk as the treatment process results in the production of a highly concentrated 'brine' by-product that is extremely difficult to dispose of without causing harm. Thus the management of waste water is highly problematic and leads to environmental degradation where storage, leakage, spillage and discharge occurs.

Examples:

- *Discharge of treated "reclaimed" water by Eastern Star Gas into a creek in the Pilliga;*
- *Location of CSG wells on the floodplain at Casino;*
- *Exploratory drilling near Woronora Dam in water catchment areas of Sydney and the Illawarra;*
- *Drilling near the Tomago sand-beds water catchment area in the Hunter;*
- *Spillage of waste water leading to extensive tree death in the Pilliga;*
- *Deliberate discharge of saline water leading to pollution event near Broke;*
- *Native animal deaths at drill ponds in the Pilliga.*

Therefore we would urge the Committee to be cognisant of:

* The potential for drawdown and contamination of groundwater aquifers, including potential for major cumulative impacts on the Great Artesian Basin.
* The pollution of surface water systems from "reclaimed" water, leading to serious reductions in water quality.
* The use of large volumes of water for drilling and fracking in water systems that are already over-allocated, such as the Murray-Darling Basin.
* The location of CSG wells on sensitive floodplains and in water catchments where no safety measures have been/can be made to ensure that flood waters are not contaminated by "reclaimed" water.

b. Effects related to the use of chemicals:

Typical releases from gas wells include BTEX (benzene, toluene, ethyl benzene and xylene), volatile organic compounds (VOCs) and poly-aromatic hydrocarbons (PAHs).

All these substances affect the respiratory system;
25% are carcinogenic;

37% affect the endocrine system;
52% affect the nervous system
40% affect the immune system.

They can and do contaminate air, surface water and underground water systems.

Heavy metals and other toxic compounds are also naturally present in coal seams and may also be brought to the surface in waste water further adding to toxicity levels.

c. Effects related to hydraulic fracturing

Fracking involves use of large amounts of ground water, which is then mixed with a chemical cocktail and forced into a coal seam in order to release methane gas. The force used in the fracking process may release other toxic chemicals naturally present but "locked up" in the seam prior to fracking taking place.

Some of the water used will naturally seep into the water table causing pollution of the ground water. The remainder is brought to the surface to be stored in "reclaimation ponds" for evaporation or other disposal – in at least one documented case by illegally dumping in a nearby creek.

Evaporation may remove the water, but the toxic chemicals will remain, either in the ground or in the air as they evaporate also. Evaporation ponds in the Pilliga were subject to overflow during periods of heavy rain. Other evaporation ponds have been show to leak as they are little more than a hole in the ground lined with black plastic. No apparent efforts seem to be made to prevent wildlife or birds from accessing, drinking and being poisoned by the waste water.

It has been shown that the very nature of fracking has caused an increase in seismic activity.[1] This does not seem to have been addressed on any level by the CSG companies or politicians in this country.

Fracking may also cause "cracks" that drain creeks, dams, rivers – and whilst the CSG companies will say there is no proof that this does happen, neither is there proof that this CAN'T happen. Making the whole process very dangerous for anyone who depends on ground water, a nearby dam, stream or river for existence.

Fracking is considered so dangerous that it has been completely banned by the French, whilst South Africa, Quebec and some 76 American local Governments have a moratorium on the practice.

d. Effect on Crown Lands including travelling stock routes and State forests:

CSG mining represents a major threat to natural areas as it:

* Leads to extensive clearing and fragmentation of native bushland and threatened species habitat and increases the risk of catastrophic bushfires;

* Represents a major threat to wetland systems, including those that are great distances apart but are hydrologically connected;

[1] Source: Vitaly V. Adushkin, Vladimir N. Rodionov, Sergey Turuntaev, and Alexander E. Yudin 2000. Seismicity in the Oilfield.
Li,Ying-Ping 1996.Microearthquake analysis for hydraulic fracture process.in Acta Seismologica Sinica, Vol 9 No 3, p 377-387
W. S. Phillips, T. D. Fairbanks, J. T. Rutledge, and D. W. Anderson 1998. Induced microearthquake patterns and oil-producing fracture systems in the Austin chalk. in Tectonphysics, Vol 289, p 153-169.

* Transforms major vegetation remnants, refuges and corridors into industrial zones. Even protected areas and public lands are not safe – CSG mining can occur in areas bordering National Parks – and then drill horizontally underground into the National Park which may cause untold damage to protected eco-systems. CSG mining is permitted in State Conservation Areas and State Forests.

Examples:

- ***The Pilliga forest*** *in NSW is the largest temperate woodland in eastern Australia. It covers more than 500,000 hectares and is home to threatened species such as the Regent Honeyeater and the Pilliga Mouse. It also helps recharge the Great Artesian Basin.*

  Eastern Star Gas plans to drill 1,100 gas-wells in the Pilliga. With each well requiring clearing for a 1 hectare pad, an all-weather access road and a corridor for gas and water pipelines plus waste water storage ponds and other infrastructure such as condensers and compressors, the forest will be fragmented. A nationally significant bush icon will become an industrial wasteland.

  Gas pipelines will run from the Pilliga along environmentally sensitive Travelling Stock Routes to a liquid natural gas (LNG) export terminal in the Hunter estuary. The Hunter estuary's Ramsar-listed wetland is also at risk.

  Pilliga CSG mining will clear at least 2,400 hectares and fragment 85,000 hectares of public lands, including State Forests and State Conservation Areas;

- *at Putty drilling is planned next to the World Heritage-listed Wollemi National Park;*

- *at Poggy, drilling is occurring on an inholding in Goulburn River National Park;*

- *in north-west NSW, Travelling Stock Routes are targeted for drilling and gas pipeline infrastructure;*

- *in the north-east, a pipeline is proposed through the World Heritage-listed Border Ranges National Park.*

e. Nature and effectiveness of remediation required under the Act

To date there has been a complete failure to ensure that any required levels of remediation have, in fact, taken place. This is true even at the exploratory phase – such as at Casino where drill ponds had not been remediated and in the Pilliga where there has been no rehabilitation of well-pads.

Regulatory processes, including assessment, approval and compliance, are all drastically inadequate. This was evident in the approval of the Gloucester AGL project without details about what it entailed, and the lack of resources or political will to enforce compliance in the Pilliga.

f. Effect on greenhouse gas and other emissions

Coal seam gas (CSG) is a fossil fuel and a significant source of greenhouse gas pollution. Whilst proponents claim it releases less CO2 than other fossil fuels, this does not take into

account the greenhouse gas pollution produced by the actual extraction process, leaking methane and other toxic chemicals.

CSG generates more than 40 times the amount of greenhouse gas per unit of energy generated than solar or wind.

Coal seam gas will make a major contribution to global warming, particularly when extraction, fugitive emissions and liquefaction prior to export are fully considered.

g. Relative air quality and environmental impacts compared to alternative fossil fuels.

CSG mining represents a serious risk to human health due to:

* Potential contamination of water used for human consumption and agricultural production. These chemicals may not be present in the fracking "mix" used, however they naturally occur within the coal seam and are released during the fracking process. Many of these chemical are carcinogens, all will last in the water table for hundreds if not thousands of years – no one really knows. It is this lack of absolute, secure knowledge of the long term impacts that should ensure CSG extraction is totally banned near any water source either above or underground.

* Impact on the Great Artesian Basin (GAB) which is a resource of national importance. It lies under 22% of Australia and is the only reliable source of water in arid and many semi-arid areas. Extracting large amounts of water to allow coal seam gas to flow will reduce the pressure in adjoining aquifers and flows to some streams will be affected. There is <u>likely</u> to be "a significant impact" on threatened species that live only in GAB springs[2].

  Scientists recently discovered life deep underground. There are thousands of species of *stygofauna* in artesian water. The task of identifying these tiny organisms has barely begun. No one knows whether they play important roles in protecting groundwater resources.

* From leakage of toxic methane and other gases during gas production and migration of methane into water supplies.

* Through poor management of chemicals and use of toxic chemicals without full disclosure, particularly during fracking and drilling.

Examples:

- *The recent foamy discharge from a well at Camden;*
- *methane leaking from gas pipelines and a water drain in the Pilliga;*
- *methane leaking from well-heads at Casino.*

Coal seam gas (CSG) is a fossil fuel - a dirty energy source that adds to greenhouse pollution.

[2] Source - Water Group Advice (to Minister Burke) on EPBC Act Referrals, QGC referral - 2008/4399; Santos-Petronas referral - 2008/4059 and AP LNG referral - 2009/4974

The gas industry claims gas-fired power stations produce 70% less CO2 than existing coal-fired power stations. This figure only refers to the emissions released when the gas is burnt. It does **not** include the emissions involved in producing the gas - the drilling, fracking, compressing, pumping, liquefying and transporting the gas; nor the loss of carbon-storing forests and woodlands cleared to make way for gas wells and pipes.

Liquefying natural gas consumes at least 20% of its energy value and cancels almost 30% of its "clean" character.

The CSG industry will increase Queensland's emissions by 21% over the next 3-5 years. The Queensland Curtis Island LNG project alone will generate 95 million tonnes of CO2-e during its construction and 20 year operational life.

The total emissions per year from 3 LNG projects approved in Queensland amounts to 24.14 million tonnes of CO2 equivalent (CO2-e) - excluding the emissions from burning the exported gas.

The Queensland government wants to export 50 million tonnes of LNG per annum. When burnt, this will generate 140 million tonnes of CO2 equivalent a year.

Total greenhouse gas emissions due to hydraulic fracturing have been estimated at 33.6 tonnes of CO2 equivalent per gigawatt hour (t CO2-e/GW.h) or about 62% **more** than for diesel and petroleum (approximately 20.3t CO2-e/GW.h)

The substantial leaks of gas to atmosphere before combustion are not included in the 70% figure. Methane is the major component of natural gas. It is a much more potent greenhouse gas than CO2, 72 times more effective at trapping heat in the atmosphere over a period of 20 years, or 25 times more effective over 100 years.

Monitoring of methane leakage in the oil and gas industry is limited, but conservative estimates suggest that during the life cycle of an average coal seam gas well, 3.6 - 7.9% of total production is emitted to the atmosphere as methane. This is at least 30% and perhaps more than twice as great as the life cycle methane emissions for conventional (natural) gas which range from 1.7 - 6%.

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

a. Legal rights of property owners and property values.

Landholders face the prospect of losing control of their land with no legal recourse.

Landholders face the prospect of itinerant workers coming and going across their property at will, with no respect for their privacy or recourse for the landholder. The very nature of itinerant work may lead to increase in crime and violence in a previously close-knit and peaceful community, it will certainly lead to stress and mental health issues for landholders.

Landholders have no control over the level of so-called "compensation" they are offered for loss of income and lifestyle.

Property values are degraded and options for re-sale lost once there is even a suspicion of an exploration licence application. Once a licence has been granted there is no escape for the landholder. This applies not just to the immediate drilling sites but across a region.

Stress due to decreased property value resulting in an inability to "escape", loss of income due to CSG infrastructure impinging on day to day operations, concern for impact of toxic emissions on family/animal health, worry of long term impact on home environment including water quality and loss of control, and low compensation all combine to cause depression and long term mental problems in affected landholders.

b. Food security and agricultural activity

Each gas well requires a 1 hectare pad plus an all weather access road and pipes. There may be a compressor, a saline water storage or evaporation pond and other infrastructure on a farm with the landholder having little or no say on exactly where they are placed.

Precision cropping and controlled traffic farming systems cannot co-exist with CSG development.

Apart from encroachment on and reduction of land available to food production, the risk of contamination of ground water threatens further loss and thus places food security at risk.

The risk of escaping toxic gases settling across the surrounding countryside will impact negatively on organic farming, vineyards and orchards.

The enormous number of heavy truck movements leads to important local infrastructure, such as roads, being run-down and damaged at a cost to the local rate-payer, who is thus made to pay for loss of amenity, water quality, air safety and lifestyle.

Examples:

- *Food security is threatened by CSG mining proposals on the Liverpool Plains, around Moree and Bellata, and the in Northern Rivers region;*

- *Pipelines threaten to cause major erosion to self-mulching black soil plains around Mullaley;*

- *CSG mining poses a threat to the vital hot springs tourist attractions from Pilliga to Moree.*

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

Regional tourism will die as no one wants to holiday in a toxic region with CGS infrastructure on the horizon and questionable water quality. Ultimately the international market will be destroyed as more and more of the most beautiful, pristine parts of NSW are undermined by CSG pollution, both visual, water and air.

Whilst employment and balancing the State books is important, one cannot, *MUST* NOT take a "quick fix" approach with an industry that has such potential for both short and long-term harm to the environment, major industry such as Tourism and Agriculture, and public health.

I ask the question "why do we need to compete with other States who are rushing to harm themselves with an insufficiently studied and regulated industry that has the potential to destroy far more than it offers in long term gain?

Mining companies and politicians cannot be entrusted with the future of the water we need to survive and the air that we breathe. Both take a short-term view of profit to be gained. Both have shown time and time again that the future is there to be ignored .. for won't it be someone else's problem by then?

d. Royalties payable to the State

Royalties paid to the State create an expectation that projects will be approved.

Royalties represent a tiny fraction of the profits expected from the pillage of NSW so when the CSG companies have finally left us with a total disaster, poisoned water, ruined farmland, worthless and unsaleable real estate, mental and physical health problems, decimated tourist industry, where will the State Government obtain sufficient funds to address the problems left behind?

Politicians are more interested in the dollar earned today rather than the nett cost to both themselves and the community in the long-term. They must be forced to think ahead to the consequences of their actions – for both this and future generations.

e. Local Government including provision of local/regional infrastructure and local planning control mechanisms.

Local Government and local communities are currently largely excluded from the planning process. Public participation and legal standing is inadequate.

CSG licences have been granted with little or no community consultation and no notice to local Councils affected.

Examples:

- *Referring specifically to the granting of PEL445 and application PELA134 in the Tweed Region of Northern NSW, part of the World Heritage Listed Mt Warning Caldera and the most bio-diverse region in Australia*[3]*, the "consultation" process consisted of one very tiny advert in the classified section of a fairly obscure farming newspaper.*

- *Meetings and seminars on the CSG mining licence process have been held in major capital cities and cost anything up to several hundred dollars to attend. This ensures that most "ordinary" people will not present for decisions that will affect their lives and those of their children and children's children.*

- *Notice of local meetings are frequently sent out at the very last minute, presumably to prevent good attendance so that CSG companies can claim they have "community consulted" and not many people were interested.*

Excuse me, but I'm going to get emotional now .... How can it be that one has to alert the community weeks prior to getting married on several public occasions – but not if you're planning to rip up their land, poison their water, release toxic chemicals into their air, send them broke and ruin their way of life? How can this be right?

[3] Source - Dr Hugh Lavery

There is no structure in place to ensure that impact on local Government controlled infrastructure such as roads, bridges, effluent disposal etc. is to be compensated by the CSG companies.

Thus local government not only has an industry that it was not told about and that rate-payers don't want, thrust upon it – it is forced to subsidise said industry by passing on costs to rate-payers. A bit like being forced to eat cockroaches for dinner and then being sent a bill for them *(oops! Emotional again!).*

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

a. Nature and extent of CSG demand and supply,

Coal seam gas is not required to meet the future energy needs of NSW. Most gas in NSW is extracted for export, not to meet local energy needs. CSG is "killing the farm" to keep China happy.

b. Relative whole-of-lifecycle emission intensity of CSG versus other energy sources,

There is a lack of information about the whole lifecycle emissions for CSG production. U.S. studies suggests unconventional gas has huge fugitive emission impacts.

The only way to deliver energy security is to start to switch to renewable energy now, particularly solar thermal. There are vast solar thermal resources in the major areas where CSG is now proposed, such as Narrabri and Moree.

The massive expansion in coal seam gas production is delaying the transition to renewable energy alternatives and, in the course of delaying the inevitable, will cause in-estimable harm.

c. Dependence of industry on CSG for non-energy needs (eg. chemical manufacture),

Coal seam gas is not required to meet the future energy needs of NSW. Most gas in NSW is extracted for export, not to meet local energy needs.

d. Installed and availability costs of CSG versus other stationary energy sources,

Couldn't find any information on this – however, are there not a lot more important issues at stake here than relative costs? Should not the future of our water supply, security of food production capability and the health, both mental and physical of our people take precedence?

e. Proportion of NSW energy needs which should be base load or peaking supply and the extent to which CSG is needed for that purpose,

Coal seam gas is not required to meet the future energy needs of NSW. Most gas in NSW is extracted for export, not to meet local energy needs.

f. Contribution of CSG to energy security and as a transport fuel.

Coal seam gas is not required to meet the future energy needs of NSW. Most gas in NSW is extracted for export, not to meet local energy needs.

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

Coal seam gas mining is exempt from a number of environmental statutes, including the Native Vegetation Act 2003 and the Water Management Act 2000. This should be rectified so that the CSG, or any other extraction/mining industry is subject to the same environmental controls (if not stricter ones) as any other industry.

Legislation controlling activities on public lands is inadequate to prevent coal seam gas mining which, once a licence has been approved, effectively privatises public lands.

Interaction with Federal legislation at the exploration phase is poorly understood and not enforced – i.e. extensive exploration without getting Federal approval in the Pilliga.

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

Experience from Queensland has shown:

- Significant problems with leaking wells both at exploration sites and once extraction/ fracking has commenced at drilling sites.

  Example:

  - *carcinogenic chemicals found in five monitoring bores at Arrow Energy's Tipton West and Daandine gas fields near Dalby;*

- An exploding well at Dalby;

- Dropping bore levels due to high use of ground water in extraction process.

  One farmer in S.E. QLD estimates that at current CSG drilling usage his bore will be completely dry in 2 to 3 years. He further estimates that the drilling company is using approximately 20 to 22 times more water than they originally estimated/claimed they would use[4].

- Growing social unrest as landholders have their lives and livelihoods destroyed with no recourse or legal standing to prevent it. Fury at lack of community consultation and growing public outrage that Governments are not heeding public concerns;

- Major impacts on heritage areas such as Gladstone Harbour, where the CSG/LNG companies have bulldozed the south-western quarter of Curtis Island, removed every mangrove and are dredging millions of tonnes of spoil from the harbour, destroying sea grass beds as they go. Consequently, the water is muddied and marine wildlife is disappearing. The only dugongs and Indo-Pacific dolphins seen in the harbour in recent times have been washed up dead. Dead turtles have also been seen in the area;

- Destruction of farmland and clearing of bushland with little or none of the promised "regeneration", which let's face it would be impossible in areas such as the Pilliga where overflow of waste water pits during periods of heavy rain has caused major salination and destruction of surrounding bushland.

[4] Source – Landline Program, ABC

- "bully boy" tactics employed by CSG companies and the Govt. to gain access to private property and then dictate whom the landholder may have on his land at any given time.

  Example:

  - *Police entering private property to arrest peaceful protesters invited there by the landholder.*

Experience from overseas has shown:

- regular fires associated with CSG wells, pipelines and facilities;
- chemicals used in fracking shown to be toxic to humans and animals with serious illness and even death documented;
- systematic contamination of groundwater with methane and toxic chemicals used in fracking and released from the coal seam as a result of fracking;
- increased incidence of earthquakes after fracking;
- CSG companies consistently lie and mislead both government and public as to what chemical are actually used in the fracking processes.

  Example:

  In the U.S. two of the world's largest oilfield services companies [Halliburton and BJ Services] have acknowledged to Congress that they used diesel in hydraulic fracturing after telling federal regulators they would stop injecting the fuel near underground water supplies.

- CSG companies consistently lying to gain access to private property.