

**Parliament of Australia Senate Inquiry:** The management of the Murray-Darling Basin Impacts of Coal Seam Gas mining

I make my submission to this enquiry with the intention that some of the affects from Coal Seam Gas mining in the Murray-Darling Basin will be considered. In my consideration I would like to draw to the Senate's attention the need to understand not only short term but long-term negative affects to the area. We are bound by our responsibility to protect the future of the Basin and extensively analyze all long term risks as well as to consider the value the land has to sustain future generations, wild life and native vegetation.

I have spent several months investigating the impacts of CSG mining overseas, chiefly in the United States of America and have attended several conferences in Brisbane run by the CSG industry and APPEA. There is no doubt that the extensive reports from CSG mining available from the USA clearly and solidly prove the need for restraint in this industry. It is essential that the high risk of water contamination be factored into as a possible long term environmental disaster to the region.

Coal Seam Gas mining is an environmentally intense form of mining. The process by which CSG is extracted has the potential to pose serious long term negative environmental and health affects over a broad range in Australia. In its evaluation both short term and long term affects must be assessed extensively and in doing this the Senate may discover that the level of risks involved would see CSG as potentially having the severest negative environmental change and affect to Australia next to early settlement land clearing.

It is therefore my intention to set forth in this document information, evidence and supporting material to draw a broad based analysis of CSG potential affects and risks.

I thank-you in allowing me to make my submission.

Claudia Cortizo

The decision the Australian Government has taken to fast track the expansion of the Coal Seam Gas industry needs to be assessed for extensive long term impacts to the region. Major changes to the landscape and affects to natural resources cannot be taken lightly. The real impacts to the Murray-Darling Basin must be made in conjunction with the understanding of the issues that has faced this region in the past and what this means for the future. After severe drought in the Murray-Darling Basin and the recent replenishing rainfall the area must be recognized for its vulnerability to drought and the preservation and sustainability to the region must be the focus for its future. Even without CSG mining, the over allocation of water for farming has not come without a price and the effects of future water allocation needs to be carefully calculated. It cannot be assumed that the area will not return to drought conditions and heavy use of natural resources will ultimately mean further droughts for future farmers.

The removal of water for CSG mining directly interferes with underground water pressure systems and the direct impacts to neighboring bores and rivers is not clearly understood. While there is some understanding of how these water network systems interact, there is little detail analysis of affects to water in the case of chemical contamination. It is unwise for major drops in water levels to be addressed with bandaid solutions such as re-injection and redistribution of water once the damage to the system has been done. You cannot rehabilitate land when natural water and ground systems are shattered and corrupted.

The CSG industry has unfolded at a rapid pace and many errors and industry accidents continue to happen. Companies have already be fined for various breaches and in one case contaminated water was directly dumped onto land. Complaints regarding direct dangers range from spills, overflows and flooding to sewerage, vegetation clearing, explosions and discharge of BTEX exceeding allowed amounts. With a continued expansion of the industry these issues will increase and the impacts will accumulate.

While it is been proven that BTEX chemicals have been responsible for ground water contamination in the US they have been officially banned in Australia. It remains unclear whether this ban is a 100% restriction or a general ban. No chemicals used in the fracking process have been tested for their suitability to be used in high concentrations under the conditions presented in CSG mining. Many chemicals used are highly toxic and are known carcinogens. In using these chemicals for fracking there is an inherent risk of contamination to vital ground water and the risks posed would be severe in the environment and pose negative long term affects to the region. At this point I would like to point out that some industry representatives have publicly presented information with the intention to mislead the public. I have witnessed in public community forums Bi-carb soda, ammonia and table salt have been displayed as "fracking chemicals." The industry is clearly trying to pave the way for better community response but considering the risks posed by the actual chemicals used this distortion needs to be further investigated and highlight the possible coverup of companies.

Mining companies are allowed to self regulate by conducting baseline studies that only collect minimal data such as salinity, conductivity and a few other expected markers. What is not being tested that would ultimately prove future contamination in bores are those chemical markers that would be present after mining, herein lies the problem. It would be expected that these chemicals were not consistently present in functioning bores yet without that detailed baseline study there is no proof which would cause a successful litigation of solid proof that CSG mining caused the contamination.

To date, Landholders who have found their bores to be contaminated are being told to "prove it" and that contaminants found in their bores could have been there before the CSG drilling began. Gas Mining companies are being entrusted with honesty and transparency amidst the possible threat of litigation and compensation. This arrangement does not support and protect the needs of landholders. It is unrealistic and unfair to allow companies to self regulate. Each bore should be deemed free from contaminants on the onset but with the possibility of hundreds of chemicals used in fracking testing each bore for all the chemicals used is neither realistic nor economically feasible for companies interested in both bottom line profits and minimal litigation.

Due to the high volume of water used in this process the government has very little choice but to try to clean and reintroduce this water back into the environment. The intention is to treat CSG associated water and to introduce it to municipal drinking and irrigation water after a reverse osmosis process. There is some current debate whether re-injection is a viable option but again the possible risk of contamination makes this a poor option. While a water treatment plant is soon to be up and running from the Kenya to Chinchilla weir area by September the government is yet to properly address the issues of contamination and radiation which will likely be present in the water. Reverse osmosis has never effectively removed all forms of radiation as radiation itself can contaminate water filters. It is hard to imagine that General Electric, in charge of supplying its equipment to SunWater has developed a fool proof system which would protect the water supply from any unwanted levels of contaminants. Water filtration systems run at their maximum capacity need to be periodically shut down for back washing and contaminants must be correctly disposed of. Both these contaminants and the 1% of highly toxic waste water left after brine solutions have been reduced need serious long term safe disposal.

The health effects of Low Level ionized radiation to humans have been extensively documented. If these contaminants are introduced into the water system to the Murray-Darling Basin the ecological and health affects would be so severe that many generations would bear the pain of horrific health problems and environmental ruin. This threat is not to be taken lightly and must be extensively weighed against any short term benefits offered by the industry.

The International scientific community has published several extensive research papers into the effects of radiation exposure, even at minimal levels. "The scientific research base shows that there is no threshold of exposure below which low levels of ionizing radiation can be demonstrated to be harmless or beneficial," said committee chair Richard R. Monson, associate dean for professional education and professor of epidemiology, Harvard School of Public Health, Boston. "The health risks – particularly the development of solid cancers in organs – rise proportionally with exposure. At low doses of radiation, the risk of inducing solid cancers is very small. As the overall lifetime exposure increases, so does the risk." Continued exposure through ingestion raises the effects extensively suggesting that even minimal ingestion is dangerous to human health. If this radiated water is used for cropping, grazing and drinking there is no stop the spread of radiation to where these products find themselves. The implications are horrifying and will increase over repetitive exposure.

All chemicals used in the process of fracking will affect the environment directly. It is unreasonable that Australians standards for permissible exposure to any of these chemicals be in any way altered or raised to allow for contamination at dangerous levels that would induce negative health affects. In one example posed here, the United States Environmental Protection Agency has set the maximum permissible level of benzene in

drinking water at 0.005 milligrams per liter (0.005 mg/L). In Australia the DECCW has set the threshold at 1 ppb for threshold concentrations for sensitive land use and for drinking water at 10 ppb. This is one of many highly increased permissible toxin levels to enter our food chain which poses a threat to our health and needs to be addressed. Permissible standards should not be adjusted to serve in the interest of industry objectives this will not serve to protect public health. All levels must be reviewed and cumulative impacts be at the forefront of government concern and monitoring.

Further environmental affects include Methane contamination of water accompanying gas-well drilling and hydraulic fracturing. Studies have produced extensive evidence that methane release into ground water is responsible for flammable tap water in households in the USA. Further air quality issues and earthquakes have been reported and these must be well understood and factored into the environmental impacts.

Anna Bligh and Kate Jones announced the setting aside of 1% of Queensland Prime Agricultural Land for protection from mining on May 31, 2011. Unfortunately CSG in the main will not be captured by much of this framework it is designed to target the expansion of mining in these areas. The CSG industry will only be restricted in applying large scale infrastructure to these regions. The full effect of the land protection policy will take affect later on this year, for some perhaps this has already come too late.

Australian farmers have abandoned 20% of agricultural land in the last 2 decades. It is appalling show of leadership that the criteria set out by the Prime Agricultural Land act does not include organic farming and thousands of existing farmlands representing tens of thousands of hectares of farming land. There is very little protection for those currently farming and we have failed to appreciate the value that these landowners have in protecting the interest of our future crop lands. These farmlands have been cared for by many generations and now they are direct threat of extinction as increasingly farmers have their dreams shattered and stolen and currently overseas investors threatens to reduce our useable agricultural land even more.

No doubt that in assessing the validity of CSG mining the inevitable question of its viability as a suitable fuel will have to be weighed. Currently companies and Government are trying promote this gas as a clean, transitional fuel. Our exportation commitments at 95% produced gas however far exceed our personal use. So the real price we as Australians are paying for this supposed "greener energy" is in no way to our favor. It must be stated quite frankly that if the true costs of production and environmental affects were fully assessed in terms of financial feasibility, carbon footprint and cleaning up of industry contamination it would be clear to see that CSG poses the longest term risks for the least advantages. To look further into the true costs I urge the Senate to access the production process in true economic and environmental terms and see if the figures really add up.

The only thing that is clean about CSG gas is that it burns cleaner than brown coal,(used in Victoria) after you factor in the true costs of thousands of meters of land clearing, the trucks used for shipping water and waste, raw material exports to China, Imported pipe manufacturing from China, road infrastructure used and repairs needed, 140,000 workers to lay the initial infrastructure (mostly qualified overseas workers),costs to fly in workers from overseas and surrounding states, building of camps to house workers, compensation to landholders for land access and loss productivity, periodic release of methane "fugitive emissions" into the air which are 70x worse than co2, the use of up to 2.5 million litres of water per well...40,000 wells planned for QLD, thousands of tones of salt brought up every day, the shipment of salt for dumping into landfill and shipment of salt product for use

overseas, construction of infrastructure including water treatment plants, compression stations and LNG storage, the importation of equipment trains such as water treatment facilities, storage facilities etc, energy to boil the brine water, transport of water back into water supply and agricultural land, the 1% of toxic waste left over from the process which will always pose a threat to the environment, the liquifying of gas, the dredging of the coast of Gladstone which is currently being destroyed, the shipping of the liquified gas, storage of the gas, litigation costs including land rehabilitation and cleaning, the permanent loss of agricultural land production and the possible need to import foods in the future for many generations, the health impacts from exposure to toxic chemicals and radiation and accidents, local job loss to industry, mental health issues arising from stress, noise, ill health and financial loss and then finally the transport and burning of the gas by China and Japan. There are many more costs to be listed.

In a recent community gathering, held in Roma, 25th June, 2011 the following speakers representing current landholders who have endured excessive stress and hardship from the mining companies spoke candidly about their experience was focused on coal seam gas. Four landowners each gave a presentation on how coal seam gas projects have had an impact on their lives followed by Ian Hayllor from the Basin Sustainability Alliance who gave a keynote address.

PRA legal advisor **Phil Sheridan** made the following comment about the idea of “good faith” negotiations between resource companies and landowners he observed that mining companies have far greater resources, be it financial, personnel, including in house lawyers and a stranglehold on information; in this situation “good faith” negotiations cannot exist. The landowners must always seek independent legal advice.

In his dealings with resource companies Phil Sheridan has observed that those based in North America know that the land that they are accessing is not theirs and it is a normal part of business that they should pay for the right of access and make any relevant compensation. The North American companies find it strange that companies based elsewhere in the world including Australian companies do not see this as a fundamental right and are refusing to make any acknowledgment of landowner’s property rights.

### **Graham Claphman**

Graham and his family have an irrigation & dry land farming operation on the floodplain, central Darling Downs. It is a natural treeless plain and until a gas rig turned up two years ago 400 metres from his house. Since he had never faced property rights issues previously, Graham had not given property rights a great deal of thought. This first well by Arrow was also 500 metres from a neighbour’s irrigation bore. It appears that CSG companies are extracting water without limitations while the surrounding irrigators have to abide by highly regulated restrictions to their use of water.

Graham expressed the opinion that there was a lot left to be desired in the process to give notification of a new coal seam gas project and the ability to raise any objections. Both the announcement of a potential project and notice of its approval were small notices in a local newspaper. The local landowners were astounded that such a project could go ahead on a floodplain of some of the best cropping soils in Australia; they never thought that mining would come to the Darling Downs. They approached the relevant Government department only to be told that “You are too far away; we are too understaffed”; the Department relies on the applicant of a project to supply the information.” The door was shut.

Those affected by this Arrow CSG project became reluctant participants in a process. They had to quickly learn about and the full details of EIS's, PEL's, ATP's & EA's. The local landowners were very concerned about

1. The one sided regulatory authority that backs gas & mining activity.
2. The lack of conditions & lack of knowledge or connectivity of underground water aquifers.
3. Inadequate land access arrangements; landowners can't negotiate on equal terms with the companies
4. Rehabilitation of high quality black soil floodplains
5. Noise

Graham is amongst 13 local landowners who have been given financial support by Cotton Australia and by the NFF Farmers Fighting Fund and they will be the first action taken against a CSG company in the Land Court.

(To view this Arrow's CSG project, Google – Grassdale Arrow evaporation pond.)

### **Megan Baker**

Megan started her presentation with the words that her experience with CSG has been good, bad & plain ugly. Megan and her husband were both long term employees of Arrow before Arrow came to drill on the Baker's land. Now days they have left Arrow employment, they have an estranged relationship with Arrow, the company has listed their home as a "sensitive receptor"; the Bakers have within a three kilometres radius a coal mine, two CSG fields, compressor stations, evaporation ponds and notice of entry by five companies.

When Arrow came to drill on their land the Bakers gave full cooperation; they were given the promise that the gas field will be a showcase of good practice and that the infrastructure would be established within six months to leave them with little disturbance to their lives. What they soon found out was that their being long term employees with the company earned no favours or concern. Their cooperation seen as a green light for the company to do whatever it pleased; in truth work started before the agreement was signed. The Baker's were treated with a lack of respect to their livelihood, lifestyle, privacy and to their property rights.

Megan stated that they have experienced problems created by Arrow in regard to weeds, erosion, fences knocked down, open trenches and sites not rehabilitated. They got that sick of their treatment that they removed the companies locks on the gates and replaced them with their own. Gas wells, pipelines and other infrastructure had been installed but remain uncommissioned. Negotiations have stalled and the annual compensation is now twelve months in arrears.

At all stages negotiations proved to be tedious, time consuming and frustrated with no continuity when often at each meeting negotiations resumed with new company personnel, none ever having any authority. Megan expressed displeasure at a statement by the Qld minister, Stirling Hinchliffe who referred to compensation as a farm income. Megan said that compensation isn't off farm income; it is trying to reclaim some of what has been lost to the farm.

In closing Megan advised that in all communication with a resource company to write everything down; also to look after your mental health because it is hard.

### **Neville Stiller**

Neville and his wife Carmel have been impacted not by CSG wells or a coal mine but by a 600 man work camp build very close to their house for the construction workers who will build the feeder gas pipelines from the Queensland Gas Company (QGC) gas fields around Tara in the south & the Wooleebe gas field to the west of Wandoan and at their juncture the export gas pipeline to Gladstone. This work camp is currently being constructed in less than 200 metres from Neville's house in direct violation to QGC's own code of conduct and of the Environmental Authority that QGC signed off to with the Qld Government. Both state that no infrastructure can be built within 200 metres of a residential dwelling and that QGC must consult with any residence within 400 metres.

Neville spoke of the history of his case, of the reluctance of QGC owned by the multinational British Gas, in the early stages to even consult with him; of QGC in an effort to appease, giving undertakings only to have them disappear at the request of verification; of having to be forced to be "in the face" of QGC in stridently stating his case or otherwise this large company would arrogantly ignore him and continue with their program regardless. QGC have shown a preparedness to ignore much of its regulatory requirements, present personnel unable to make a decision and the observation could be made that for its own staff it is unpleasant workplace and has demonstrated deficiencies in the management system of the QGC/ BG group.

After QGC offered a compensation package that was so miserly that Neville & Carmel found it an absolute insult and negotiations broken down. The case has now been filed in the Environment Court on behalf of Neville & Carmel.

These are a few of the hundreds of stories which are currently surfacing, these are stories of Australians that need to listened to. We are at a critical point in our history where our actions will be irreversible. We must make these decisions with wisdom and the knowledge that we are responsible for any negative impacts to future generations.

I ask the Senate to examine this Industry and give maximum value and priority to this extraordinary landscape that is the Murray-Darling Basin before it is too late.

Claudia Cortizo.

Reference:

<http://www.environment.nsw.gov.au/clm/servicestation.htm>

<http://www.pnas.org/content/108/20/8172.full> systematic evidence for methane contamination of drinking water associated with shale-gas extraction.

[http://www.nap.edu/catalog.php?record\\_id=11340](http://www.nap.edu/catalog.php?record_id=11340). Health effects of low level ionized radiation on health.