

## **Inquiry into Unconventional Gas in Victoria**

My name is Sarah Fox and I live in beautiful Gorae, Victoria 3305. I am extremely concerned about Unconventional Gas (UCG) mining in Victoria and the negative impact it has on the environment, physical and mental health/wellbeing of human and animal life, the economy and social aspects.

The following submission outlines the reasons why I believe there should be an outright and permanent ban on all onshore unconventional gas mining in Victoria in response to the Terms of Reference issued by the State Government.

This inquiry offers the greatest opportunity to stop this industry before it becomes established. Based on the experience of farmers in Australia and North America, I do not believe that this industry can co-exist safely with other land uses such as agriculture, conservation and tourism.

According to the Australian Bureau of Statistics (ABS) Australian Demographic Statistics released in Dec 2014, Victoria had the highest increase in population at 1.8% growth compared to all other states in Australia with the population at 5,886.4 billion, representing a densely populated state. Victorians rely heavily on diverse agriculture and food production and also provides significant nature based tourism where the UGC industry wants to become established. Unconventional gas mining will industrialise the landscape and impact on rural land dwellers and residents in adjacent areas. UGC is a fossil fuel which will further entrench our current reliance on coal and gas as energy sources. It is energy intensive to produce and will yield significant greenhouse gas emissions.

I urge you to recommend that Victoria ban all unconventional mining permanently.

### **(1) the prospectivity of Victoria's geology for commercial sources of onshore unconventional gas;**

The Research Paper into Unconventional Gas: Coal Seam Gas, Shale Gas and Tight Gas located on the Parliament of Victoria website (<http://www.parliament.vic.gov.au/publications/research-papers/8927-unconventional-gas-coal-seam-gas-shale-gas-and-tight-gas>) highlights that Victoria's brown coal resource may yield less coal seam gas than black coal and that it may be harder to extract and therefore more costly to produce. It also states that "At present, Victoria has no coal seam gas or shale gas production or confirmed resources", however this has not deterred gas and mining companies such as Lakes Oil from being granted exploration permits to look for other gas resources such as Tight Gas as outlined in the report.

Energysources.vic.gov.au outlines on their website that Victoria's three geological provinces with oil and gas prospectivity are Gippsland Basin, Otway Basin and Murray Basin. These three major areas of Victoria include much of our finest grazing and dairy country, a significant amount of our fruit and vegetable production and some of Victoria's greatest tourist attractions.

These areas and the whole of Victoria are too precious to sacrifice to unconventional gas mining in return for minimum royalty returns for the state.

**(2) The environment, land productivity and public health risks, risk mitigations and residual risks of onshore unconventional gas activities;**

Unconventional Gas Extraction (Fracking) involves a large quantity of water, sand and chemicals being injected into gas bearing rock at high pressure to allow the gas to flow to the surface of a well. I am most concerned about the risks of contamination of Victorian aquifers and groundwater which in my immediate area are heavily relied on for drinking water for people, livestock, wildlife, agriculture and recreational activities. Concern is raised where cracks resulting from fracking make connections with existing cracks, allowing fluids and gases to migrate higher up than expected and where wells aren't properly installed especially where sealing space between the main well pipe and surrounding earth has been done improperly. The pipes themselves could also corrode and leak creating other pathways for contamination of water sources.

Another major risk is explosion. Reports by Inside Climate News reported in May 2015 an explosion that occurred in Texas USA from a fracked well owned by Encana Corp that spewed liquid petroleum high into the air and forced families to flee their properties. A resident Leonard Cordova who lives 150 yards from the well, was unable to escape until two hours after the explosion and explained how he suffered a headache and sore throat that same night. Three weeks later in June, Inside Climate News reported that evacuated residents were still unable to go home until their homes had been decontaminated. A picture reveals the ground was turned brown after the explosion and livestock have had to be washed and cleaned. The displacement of families, the mental stress on people and physical stress on livestock is enormous. Why would we allow in Victoria an industry that places more importance on profit than the safety of people and the environment?

There is emerging evidence from the United States that exposure to fracking chemicals either directly or indirectly may be hazardous to health. <http://www.ncbi.nlm.nih.gov/pubmed/22444058>  
In QLD Australia this ABC news report highlights the increase in health complaints of families in western Darling Downs. <http://www.abc.net.au/news/2012-07-26/health-experts-to-probe-csg-health-complaints/4155672>

Doctors for the Environment Australia Inc outlined in their submission to the Review of the National Industrial Chemicals Notification and Assessment Scheme August 2012 that "Adequate health risk assessment is an important tool for assessing human health impacts of the industry, but this relies on accurate hazard information, which is largely absent. One of the problems is the lack of public transparency around the chemicals used, the majority of

which have not been assessed for safety (and none for safety in the context of fracking), and the lack of monitoring of their use".  
[http://www.health.gov.au/internet/main/publishing.nsf/Content/2214528CA36A2A62CA257BF0001B4259/\\$File/dea-2012.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/2214528CA36A2A62CA257BF0001B4259/$File/dea-2012.pdf)

The industry needs to be held accountable for full disclosure of the chemicals used and independent risk assessments performed.

- (3) the coexistence of onshore unconventional gas activities with existing land and water uses, including:-**
- (a) agricultural production and domestic and export market requirements**
  - (b) the legal rights of property owners and the impact on property values; and**
  - (c) any implications for local and regional development, investment and jobs;**

DEPI Victoria website advises that Victoria's agricultural industries used a total land area of 10.6 million hectares; 6.1mh mainly for grazing and 4.5mh for cropping with a gross value of \$11.6b of agricultural commodities produced. Victoria is the largest food and fibre exporting state. The value of food and fibre exported from Victoria increased 12 per cent in 2013-14 to reach a record \$11.4 billion, accounting for 29 per cent of all farm exports from Australia.

I refer to a working paper released by CSIRO called "Farmer's perceptions of coexistence between agriculture and large scale coal seam gas development" [http://www.gisera.org.au/publications/tech\\_reports\\_papers/ag-proj-2-farmer-perception-workingpaper.pdf](http://www.gisera.org.au/publications/tech_reports_papers/ag-proj-2-farmer-perception-workingpaper.pdf) to support my belief that unconventional gas activities cannot co-exist with (a), (b) and (c) above. The paper highlights the results from workshops held with farmers in QLD namely, Roma, Chincilla and Dalby which cover a range of agricultural diversity within the Surat Basin and also where CSG activities are being performed.

In relation to Place identity and landscape aesthetics, the farmers said high levels of CSG-related traffic on their farm were said to introduce concerns of safety and security for their families and this threatened to impact a family lifestyle that they had enjoyed on that same farm when they themselves were young. For some farmers, the impact of CSG infrastructure on the landscape's aesthetic value was such that they were thinking of moving even though they had planned to retire onto their property. They were caught between maintaining continuity and coming to terms with landscape change. Farmers' self esteem was clearly shown in their explanation of how they took pride in the aesthetics of their farms and how this portrayed notions of technical prowess and care for the land. It was clear that for some farmers, CSG infrastructure had impinged on the positive feedback that they had been receiving from their farms. Finally, there was much discussion on the impact of CSG development on farmers' self-efficacy. Farmers were deeply

concerned about the risk of loss of ground water, impacts on their farm operations and the values of their properties. Their farms are their livelihoods and any adverse impact on the farm is not just a loss of money. It is a restriction on their ability to meet their personal goals. The addition of CSG infrastructure into the farm landscape has raised concerns with many landholders due to perceived risks to the environment, family and business. Many of the landholders involved in the group discussions described problems in communicating their concerns with CSG companies. Our interpretation of this issue, based upon the discussion group findings, suggests that this has been due to both the difficulty of raising place identity as an issue worth concern, and people's ability to communicate it, especially when farmers can look at the landscape, and its changes, and interpret it in ways that some CSG company employees may not.

In response to Change acceptance and management, the farmers were asked to respond to the statement "I feel a civic duty to support CSG as part of the national or local economic interests". The responses were varied (25% Strongly Agree or Agree; 45% Neutral; 30% Disagree or Strongly Disagree). Those who disagreed felt that the majority of profits would leave the country via international CSG companies, that agriculture provided much better benefits in the longer term with much lower levels of government support, and that their support for such a development was moot in any case because it had already been supported via government legislation. Those who answered indicating some level of civic duty did so out of concerns for local, not national, duty. They felt some need to be involved in a development that may provide for local jobs, especially for younger people. However, as seen by Perry (2012), support or feelings of civic duty seem to be waning once the impacts of large-scale development are realised. Some statements describing support for local development were soon followed by discussions of the perceived adverse impacts of these same local economic benefits including the changing nature of rural towns, crime, rising labour costs, and difficulties in engaging local tradesmen or experienced labourers. The benefit of employment for young people was quickly balanced by the competition with local family businesses by new externally-operated companies. Further discussion then explored the ability of farming families to cope with such rapid change. Participants were questioned regarding a particular trend observed by Perry (2012) in Pennsylvania where changes in the nature of relationships between local people emerged during gas development. When surveyed, 90 percent of participants agreed or strongly agreed that their neighbours and community were important to them as a farmer and as a resident. The patterns of relationship breakdown caused by inequalities in costs and benefits observed by Perry (2012) were described to the participants and they were asked if they were aware of any similar changes occurring locally. The participants suggested no strong evidence as yet of breakdown in relationships between farmers. They felt that there was a general acceptance each farmer would have different plans for their property and their farm business and that farmers should be entitled to plan as they see fit. However,

it was clear to them that there is a great potential for friction to occur between neighbours, and that the increased conflict seen overseas could eventuate in their area. Possible causes of conflict include inequity in access to water produced by the CSG extraction process, differences in acceptance of the CSG industry, or impacts of CSG development that may reach across property boundaries (e.g. pollution). However, it was generally acknowledged by the farmers that it may still be too early for some of the relationship impacts of rapid CSG development to be observed given that the CSG industry is still in the early phases of its development. Finally, one clear similarity with the observations in Bradford County was observed even though it was not explicitly sought. Perry (2012) explained how people experiencing gas development described the experience using terms such as “invasion” or “occupation”. The same language and metaphors were used in the various discussion groups in this study. There was a real sense of the farm being their “country” and therefore the unrequested intrusion of CSG development was seen as an occupying force. The use of common high visibility uniforms by all CSG and contractor staff further supported the analogy, though interestingly one participant adapted the wording to an agricultural metaphor in describing the large workforce as an invasion by an “orange fungus”. A previous study in Chinchilla found residents describing a ‘tsunami of change’ (Walton et al., 2013). In either way, the use of such wording clearly indicates the perceptions of local farmers regarding the nature of the CSG development to date.

The paper goes on to outline the results of discussions with farmers around Off-farm income (CSG compensation payments), CSG company engagement and the impact of CSG development. Several trends were highlighted in the farmer’s responses, firstly, increased truck traffic caused many issues and the negative impact on all aspects of the farmer’s lives. Secondly, engagement with CSG companies impacts on wellbeing in ways that affect personal lives, families, and ultimately on health. Farmers are concerned about possible impacts of infrastructure on the environment and how this subsequently impacts the health and effectiveness of themselves and their farm. Interestingly, the paper reveals that perhaps the most obvious trait of the ideas provided by the brain storming with the farmers, was that they were all negative.

- (4) the ability of potential onshore unconventional gas resources contributing to the State’s overall energy sources including –**
- (a) an ability to provide a competitive source of energy and non energy inputs for Victorian industries;**
  - (b) an affordable energy source for domestic consumers; and**
  - (c) carbon dioxide emissions from these sources;**

The Australia Government Dept of Industry’s Eastern Australian Domestic Gas Market Study <http://www.industry.gov.au/Energy/EnergyMarkets/Documents/EasternAustralianDomesticGasMarketStudy.pdf> concludes that Projections of gas demand in

the eastern market have changed considerably over the last few years as the implications of factors affecting the wholesale gas price have become clearer. In the period of interest to the study, it is reasonable to assume gas demand by the electricity generation sector will significantly decline, the residential and commercial sector will experience relatively steady demand, and while demand in the large industrial sector is in a declining trend, the extent of the impact of higher prices remains uncertain. Therefore, the most significant and uncertain element of the debate on demand is primarily around the impact on large industrial users, particularly manufacturers. While the effect of rising gas prices on industry costs and competitiveness should not be understated, this needs to be viewed in the context of a range of factors that impact on the overall competitiveness of manufacturing and industrial gas users. Firms with the highest sensitivity to gas prices are those in trade-exposed, gas-intensive industries. Firms that use gas as a feedstock are particularly vulnerable due to a lack of substitutes. Other industrial activities may require large capital investments in order to switch fuels where uncertainty about the price and availability of gas makes long-term investment decisions difficult. If firms that are sensitive to gas prices expect the price to remain high for a long time they may also exit the industry. Demand will respond to price. In the current environment, the extent and rate of change in the gas market and the consequent supply uncertainty appear to be making it difficult for firms to be confident that they are being offered gas on fair terms. At the same time, contracts. Gas users may therefore need to adapt their contracting and supply strategies to secure supply. The difficulty being experienced by large gas users highlights the need for improving information available in the market to facilitate informed and efficient short and long-term purchasing decisions. This clearly indicated that unconventional gas resources cannot contribute to affordable energy for domestic consumers.

UCG is a fossil fuel and the only way to stop its effect on increasing climate change is to stop burning fossil fuels and stop UCG. The gas companies are more likely to increase their profits by investing shareholder money into renewable energy sources that consumers are more favourable with.

- (5) the resource knowledge requirements and policy and regulatory safeguards that would be necessary to enable exploration and development of onshore unconventional gas resources, including –**
- (a) further scientific work to inform the effective regulation of an onshore unconventional gas industry, including the role of industry and government, particularly in relation to rigorous monitoring and enforcement, and the effectiveness of impact mitigation response; and**
  - (b) performance standards for managing environmental and health risks, including water quality, air quality, chemical use, waste disposal, land contamination and geotechnical stability;**

I believe the best way to regulate this industry is to ban it. Negative responses to UCG by farmers in Australia and around the world highlight the need to ban UCG in Victoria. The following places have outright banned fracking:

USA – New York – December 2014  
 USA – San Benito County, California – April 2014  
 USA – Mendocino County, California – 4<sup>th</sup> November 2014  
 USA – Santa Cruz County, California – May 2014  
 USA – Highland Park, New Jersey – 7<sup>th</sup> Sept 2013  
 USA – Secaucus, New Jersey – 26<sup>th</sup> June 2012  
 USA – Denton, Texas – 4<sup>th</sup> November 2014  
 USA – Hawaii – October 2013  
 USA – Vermont – 17<sup>th</sup> May 2012  
 UK – Wales – Feb 2015  
 Northern Ireland – July 2014  
 France – 30<sup>th</sup> June 2011  
 Luxembourg – 13<sup>th</sup> November 2012  
 Bulgaria – 18<sup>th</sup> January 2012  
 Spain – 30<sup>th</sup> January 2014  
 Canton of Fribourg, Switzerland – April 2011  
 Austria – March 2014  
 Italy – September 2014  
 NZ – Christchurch/Aotearoa – April 2012  
 Kaikoura – April 2012

Not to mention the Victorian communities that have declared themselves Gas Field Free also.

(6) relevant domestic and international reviews and inquiries covering the management of risks for similar industries including, but not limited to, the Victorian Auditor-General Office's report Unconventional Gas: Managing Risks and Impacts (contingent upon this report being presented to Parliament) and other reports generated by the Victorian community and stakeholder engagement programs.

- University of Wollongong - <http://ro.uow.edu.au/cgi/viewcontent.cgi?article=2187&context=coal>
- National Toxins Network - <http://www.ntn.org.au/wp/wp-content/uploads/2013/09/NTN-sub-WA-UCG-Inquiry.pdf>
- Dr Wayne Somerville - Clinical Psychologist - [http://www.gabpg.org.au/wp-content/uploads/2013/10/CSG\\_Health\\_Risk\\_Management\\_Tools\\_Dr\\_Somerville.pdf](http://www.gabpg.org.au/wp-content/uploads/2013/10/CSG_Health_Risk_Management_Tools_Dr_Somerville.pdf)
- National Toxins Network - <http://ntn.org.au/wp/wp-content/uploads/2012/04/NTN-CSG-Report-Sep-2011.pdf>

Thank you for your time and consideration of my submission.

Regards

Sarah Fox

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