



To the Parliamentary Inquiry into Unconventional Gas Mining in Victoria -

We are a community group located in the small coastal town of Venus Bay, South Gippsland. We also represent the views of farmers in the surrounding areas, such as Tarwin Lower, Pound Creek, Tarwin Meadows and Walkerville. Our town can reach over 1,500 residents in peak season.

**Many tourists and holiday home owners have also been surveyed and are aghast at the possibility of fracking.**

We are strongly opposed to onshore gas mining, because of the concerns of farmers and local residents about the complete impossibility of co-existence between the invasive CSG industry and the farming and leisure pursuits in our area.

We have a mining exploration licence owned by Leichhardt Resources Pty Ltd, EL5416, over our area, already causing a large amount of concern and stress.

**We oppose all forms of unconventional gas mining, both onshore and offshore, either from a coal seam, a layer of shale or sandstone, or any other geological structure.**

We recommend a complete and permanent ban against all onshore gas mining, and a complete ban against the use of any unconventional gas mining techniques, including but not limited to: hydraulic fracturing; horizontal drilling; and underground gasification or liquefaction processes. We use a large aquifer for water, including fire control, drinking, agriculture and dairy and beef farming.

This ban should include all types of onshore gas resources, regardless of the geological structure in which they are found, and regardless of whether they are currently administered by the Petroleum Act or the Minerals Act.

(1) the “prospectivity” of Victoria’s geology for commercial sources of onshore unconventional gas;

Victoria's underground water structures are complex and fragile. The SRW's hydrogeological mapping report can be found at:

[http://www.srw.com.au/Files/groundwater\\_maps/Hydrogeological\\_Mapping\\_Report.pdf](http://www.srw.com.au/Files/groundwater_maps/Hydrogeological_Mapping_Report.pdf) pg 18). As can clearly be seen, the seams and aquifers have a complex and delicate hydrogeological relationship.

The report states: "The Latrobe Group comprises the most regionally extensive aquifer system in the Gippsland Basin". These aquifers provide Victorian farmers with water, Australia's single most precious and replaceable resource. There are energy alternatives; **there are no water alternatives**. Hydraulic fracturing causes aquifer contamination, mainly by methane mixing with the water.

There are many reports of rivers near fracturing sites producing flammable gas. We live and farm in a high fire risk area. The general response from industry figures is: "there is no evidence that the river was not producing flammable gas prior to hydraulic stimulation of the resource, and as such, we cannot be held financially, legally, or morally responsible for this". I hope that the Parliamentary Inquiry will be able to look at the truth in these matters.

**The Gippsland hydro-geological structures are inappropriate for onshore gas mining activities. It is not worth risking these with some fly-by-night mining programme, where the damage is long term.**

(2) the environmental, land productivity and public health risks, risk mitigations and residual risks of onshore unconventional gas activities;

The environmental, land productivity and public health risks, and residual risks of onshore gas mining are numerous and proven. **Risk mitigation strategies are ineffective and not worth the paper they are written on.** We have seen this with several disasters in Latrobe Valley – the mining company do what they want, and the state government turns a blind eye.

Our concerns include the following.

Environmental risks:

- Methane contamination of groundwater.
- Contamination of groundwater by other products - for example, the fine given by the NSW EPA to SANTOS, finding that they had polluted groundwater with uranium and other solids through their onshore gas mining activities. (<http://www.epa.nsw.gov.au/epamedia/EPAMedia14021802.htm>) Origin Energy also admitted to have been using a product containing asbestos as part of onshore gas mining activities in Queensland (<http://www.theaustralian.com.au/business/mining-energy/origin-energy-suspends-drilling-over-asbestos-find/story-e6frg9df-1226853907614>)
- Increase in soil and groundwater salinity
- Depletion of groundwater through over-extraction for use in onshore gas mining activities.
- Waste water (also called various things like 'produced fluid') is often sprayed on public roads and private property, or else kept in holding pools, which have been well documented to leak or break.

**Some farmers even assume, mistakenly, that CSG waste water can be used for irrigation !**

**We have extreme concerns that CSG waste water will be used for this purpose.**

Human error cannot be overlooked as a potential source of contamination, if quantities of contaminated waste water are kept in the area.

- Unconventional gas drilling produces the product of methane, generally to be burnt in order to provide energy. Methane is a potent greenhouse gas with a global warming potential around 20 times higher than that of carbon dioxide. In order to reduce global warming, we must cease the extraction and consumption of fossil fuels immediately, including all onshore and unconventional gas.
- Unconventional gas drilling often involves fugitive emissions. This is due to the nature of the geological structures in which it is found, and the nature of unconventional techniques, such as hydraulic fracturing and horizontal drilling, which tend to produce long and unpredictable 'streams' of gas that be reliably captured.
- Degradation and clearing of native forests, and other significant natural sites or habitats, to make space for drill pads and roadways. We wish the Inquiry to note specifically that although current proposed onshore gas mining activities in Victoria are for “exploration” and include less than twenty wells, **if a commercially viable resource were to be found and developed, this would be likely to involve more than 100 individual gas wells, each with their own drill pad and access road. This adds up to a large amount of disruption of roads, clearing and degradation of farming land.**

Land productivity risks:

-The threat that onshore gas mining poses to the Gippsland dairy industry. Gippsland dairies produce extremely high quality milk. We have many organic and export dairying enterprises in our region.

-Methane contamination of groundwater threatens the quality of Victorian fibre, beef, and dairy through contamination of stock or water used for irrigation. Australian produce is known worldwide to be clean, and of high quality. Onshore gas mining would mean we lose that selling point.

**-Tourism is a major part of the local economy. People flock to Venus Bay and surrounds because of the unpolluted beaches for surfing, fishing, swimming and bike riding. Mining threatens our tourism industry by replacing beautiful natural sites and uncontaminated rivers, such as the Tarwin River, with large, noisy, destructive, invasive gasfields.**

Public health risks:

-Onshore gas mining has many public health risks.

A peer reviewed study by Dr Marion Carey: [http://dea.org.au/images/general/viewpoint\\_issue\\_8\\_CSG.pdf](http://dea.org.au/images/general/viewpoint_issue_8_CSG.pdf)  
We ask each member of the Parliamentary Inquiry to look at this study.

It outlines:

- Contamination of air, soil and water through onshore gas mining activities as a public health risk
- Hazardous chemicals used in onshore gas mining activities in Australia, including ethylene glycol, and ingredient in anti-freeze, collects in the kidneys in a crystalline form and can affect kidney function, as well as the nervous system, lungs, and heart.
- Although the so-called BTEX chemicals are banned as additives in Victoria, however, there is some evidence that these chemicals are released through the process of hydraulic fracturing.
- Health risks presented by the lack of uncontaminated ground water, for example, if Australia experiences another drought.
- Contamination of drinking water has been associated with onshore gas mining activities in the USA
- Volatile Organic Compounds (VOCs) are released at various stages in drilling and by compressors and other equipment. VOCs contribute to various health risks including impaired lung function.
- There are numerous mental health concerns for people living amongst gas fields.

Exploration wells are fracked to optimize the flow and the wells are flared for months. There is no explanation of the risks and precautions taken in these fracking and flaring operations. There is no publicity given to any air or water testing. There have been at least two separate unpredicted explosions locally due to gas migration known to the community from just a dozen exploration wells...This results in understandable anxiety about safety risks. In Gloucester this first phase has taken 5 years so far and production has yet to commence.”

We wish to draw the Inquiry's attention to the inappropriate management of waste water.

The practice of using holding ponds is dangerous. In times of rain, the ponds often overflow and run off into the surrounding area.

**Members of our group have seen the unprotected holding ponds near Sea Spray, a clear example of the industry's lack of follow-up after they abandon their wells for more lucrative areas elsewhere.**

Failure rates of gas wells start at 6% in the first year and increase dramatically with each successive year. Abandonment and capping practices are poorly monitored. As with remediation of coal mines, the industry has no interest in spending additional funds on ensuring legacy safety of these sites. Once the profitable resource has been extracted, risk mitigation is of no consequence to the extractors.

- (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;

Onshore gas mining requires an enormous amount of water which is then unavailable for agricultural

production. Onshore gas mining has also consistently been linked to water pollution, particularly with methane and industrial chemicals.

Victoria's competitive advantage is entirely due to the quality and cleanliness of our product. This reputation, and our enormous food export business, **cannot coexist with onshore gas mining activity.**

Landholders are generally treated badly by gas companies. See this comment in the NSW paper Sydney Morning Herald :

<http://www.smh.com.au/comment/coal-seam-gas-industrys-solution-to-underground-pollution-is-to-bury-the-proof-20140227-33m4t.html>)

"The pattern in the US is that when water contamination surfaces, the gas company pays an undisclosed sum of money in return for a non-disclosure agreement that prevents people talking about their water contamination. It is the gas industry itself, with its teams of lawyers and deep pockets, that prevents investigations into water contamination."

More than 50 communities around Victoria have conducted comprehensive surveys of landholders and residents and consistently found strong opposition to gas mining, with results as high as 99% of residents opposing the development of a gas industry.

**We are busy surveying our local community and have found mounting concern from local farmers and residents, especially during the recent Seismic Survey carried out by the Victorian Government. We question why the survey was carried out during the same time period as this Inquiry. The survey caused a lot of stress to residents of Venus Bay and surrounds.**

Gas mining is an industrial and infrastructure-intensive industry, which needs very few workers. Agriculture and tourism provide a vast majority of jobs for rural and regional Victoria. These industries cannot coexist, so developing gas fields will produce a net loss in jobs, investment, and income, mainly from agriculture and tourism.

- (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;

1. Victoria should transition to an entirely renewable energy supply future. This is possible and can be seen elsewhere, for example in many regions of Germany, and South Australia. A renewable economy is a big ask but it is achievable. **Onshore gas resources are not renewable and as such should not form a part of Victoria's energy future.**

2. Gas prices have increased dramatically in the last few years. This will increase as gas reserves run low. Unconventional gas mining is resource intensive and costly, due to its massive and invasive infrastructure requirements. It will never be as cost-effective as renewable forms of energy generation.

3. The majority of onshore gas reserves are earmarked for export. This will tie Australian gas markets to an international market, which will force domestic consumers to pay international prices for our resource. We currently have an oversupply of electricity, and as we have no industry apart from farming, another energy supply, such as CSG is totally unnecessary. It's not worth the risk.

4. Carbon emissions and other greenhouse gas emissions as a result of onshore gas mining will be large. Methane (CH<sub>4</sub>) has a global warming potential (GWP) of approximately 20, i.e., it is 20 times more powerful than carbon dioxide (CO<sub>2</sub>). Methane is the primary resource being collected in onshore gas mining

activities, and as outlined above, it is prone to leak extensively both at the point of collection and at other points where fractures have allowed it to escape, for example through groundwater, to the surface. There is strong evidence of methane clouds gathering over gasfields. ([http://science.nasa.gov/science-news/science-at-nasa/2014/09oct\\_methanehotspot/](http://science.nasa.gov/science-news/science-at-nasa/2014/09oct_methanehotspot/)):

"One small "hot spot" in the U.S. Southwest is responsible for producing the largest concentration of the greenhouse gas methane seen over the United States – more than triple the standard ground-based estimate....In each of the seven years studied from 2003-2009, the area released about 0.59 million metric tons of methane into the atmosphere."

The study also specifically notes that although this cannot be attributed to hydraulic fracturing, it should be attributed to "leaks in natural gas production and processing equipment". On this basis it is vital that the Inquiry understand that hydraulic fracturing is NOT the only objectionable element in onshore gas mining, but that all onshore gas mining activities cause massive leaks of greenhouse gases.

7. When methane is burnt to produce energy, for example in steel mills or in domestic heating appliances, a chemical process called oxidation occurs in which methane (CH<sub>4</sub>) is converted into carbon dioxide (CO<sub>2</sub>) and water (H<sub>2</sub>O). So even when methane is not leaked during the mining process, and is properly collected, distributed, and consumed, it contributes a large amount of greenhouse gas emissions.

8. Industry figures recommend methane as a "transition fuel" between coal and a renewable economy. However this is unnecessary and serves only the interests of those who profit from these extractive industries. It is much better to move from coal to renewables without first developing another highly polluting and destructive industry (i.e. gas).

No amount of regulatory safeguards or resource knowledge requirements could possibly alleviate the dangers which have been consistently linked with onshore gas mining, both in Australia and overseas.

**In conclusion, we recommend once again that the Victorian Parliament place a complete ban on all onshore gas mining activities, including all unconventional gas mining techniques.**

We would like to thank the Inquiry for receiving our submission, and we hope that you will seriously consider the points we have raised.

Yours Faithfully,

Michelle DeGruchy, on behalf of CSG-Free South Gippsland