

**STATE GOVERNMENT INQUIRY INTO UNCONVENTIONAL  
GAS IN VICTORIA  
SUBMISSION**

7 July 2015

I write to make a submission to the State Government's inquiry into unconventional gas on behalf of the community group **nogasfieldsforbirregurra**, which developed out of concern from the local community for the environment, its people, industries and lifestyle, and the impact unconventional gas mining would have on this community. Birregurra is a small rural town located at the foot of the Otway Ranges, approximately 150 kilometers west from Melbourne with a permanent population of approximately 550 people. The town services a larger rural community, which derives its income from farming and tourism. The community group undertook to inform itself and residents of Birregurra and Warncoort and the surrounding farming community of the methods used in unconventional gas mining, the legal position of the landholders and the benefits and disadvantages associated with this industry. A community survey was undertaken resulting in 95.6% of this community saying **NO** to unconventional gas mining in this area. Based on these results, I inform you that our community has declared itself **gas field free**. We, like many other communities across Victoria found that there is no social license to operate an unconventional gas mining industry in this area.

During our survey of the local community, we were confronted with questions similar to those of the terms of reference of this inquiry. As the unconventional gas industry is relatively new, much of the evidence unfortunately comes from the mistakes made by others in their rush to take advantage of a new and untested industry.

We would like to focus on point 2 in the terms of reference to this inquiry.

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

Groundwater plays a vital role in sustaining existing food, agriculture and tourism industries in Victoria. The densely populated garden state of Victoria supports a rich agricultural, food and tourist industry, and an increasing expanding organic produce industry which is reliant on Victoria's clean and green image. These industries and image are in direct competition with an unconventional gas industry. Supporting these industries in the Otway region is the Otway Artesian Basin, which is described by the National Centre for Groundwater Research and Training (2014) to have low to moderate productivity. Groundwater is not an infinite resource and its connectivity with surface water resources means that care must be taken to ensure that both groundwater and surface water supplies are used sustainably. Australia's historic over allocation and

overuse of groundwater has produced an unacceptable decline in ground water levels. The last two decades in particular has seen a significant increase in groundwater reliance.

The National Water Commission (2014) acknowledges that the growth of mining and unconventional gas industries and their increasing level of coexistence with other land users have exposed weaknesses in water planning instruments to assess the suitability of mining and unconventional gas industries' water use and impacts. A general paucity of groundwater systems data throughout the country, coupled with challenging data-sharing arrangements between industry and water planning agencies, constrains the capacity of water planners to make appropriate decisions on water allocation and management.

Management of groundwater use to minimize undesirable impacts revolves around determination of a 'sustainable yield'. Sustainable yield is defined in the National Water Initiative as: the level of water extraction from a particular system that, if exceeded, would compromise key environmental assets or ecosystems functions and the productive base of the resource. Even within this definition, there is a great deal of flexibility in how sustainable yield could be estimated, and there is no standardised method across Australia (National Centre for Groundwater Research and Training, 2014). As there is no indication of quantities of unconventional gas mining operations the industry proposes for Victoria, there is

no ability to assess the amount of groundwater the industry will require, and therefore no data to assess the potential for conflict over future limited water supply, with existing industries and ecosystems.

Key water management challenges in unconventional gas mining are the effect of depressurization on surrounding aquifers; the likelihood and impacts on inter-aquifer leakage caused by aquifer depressurization and hydraulic fracturing (fracking); and chemical processes affecting the quality of groundwater and safe disposal of the released water. A major issue where fracking is used to extract coal seam gas is that fractures can extend beyond the coal seam and induce leakages between aquifers, contaminating good quality groundwater with saline groundwater and chemicals used in the fracking process. These leakages can also cause a reduction in aquifer pressures reducing quantity and access. The Otway Basin is considered structurally complex, which may increase the potential for fluid flow between gas shales and other units including aquifers.

The co-produced or flow back water extracted from a gas well is generally equivalent to or more than the volume of fluid injected. Co-produced water is typically contaminated by excessively elevated levels of salts and chemicals used in the fracking process. Exacerbating this however, is the real threat of geocontamination with naturally occurring chemicals and minerals found in coal seams such as Benzene, Toluene, Ethylbenzene and Xylene (BTEX), heavy

metals, Radium, Thorium and Uranium (NORM's) and volatile and semi volatile organic compounds (VOC's). Of great concern is the treatment, storage and release of any co-produced water from unconventional gas mining. Unfortunately, industry guarantees have not prevented storage dam walls from being compromised in Queensland, along with illegal disposal into sewerage systems in New South Wales and pipeline failure in New South Wales to name a few.

In addition to the issue of the impact of the unconventional gas industry on the Otway Artesian basin we list the following concerns. While not going into depth on these issues we make note that these are **no less an issue** to the residents, farmers and businesses of the Birregurra and Warncoort region.

### **Industrialisation of the landscape**

By the term 'the industrialisation of the landscape' caused by the unconventional gas industry we include thousands of drill pads dotting the landscape, thousands and thousands of kilometres of piping, thousands of kilometres of roads to reach the drill pads, thousands and thousands of trucks carrying in fracking fluids and then removing it again, and the burning off of methane at the well sites 24 hours per day.

## **The public health risks associated with this industry**

By this we mean

the impact of this industry on the quality of air in regard to the methane emissions and other air contaminants for the residents living in and near the gasfields particularly for children and the elderly,  
the risk of water contamination,  
the effects of exposure to the chemicals involved in fracking, AND the release of underground chemicals as a result of fracking on the mine workers and residents, and  
the psychological stress of residents and farmers who no longer have the ability to 'manage' their own land and farms.

## **The lack of economic benefits for the local economy**

The negative impact of the industry upon the 'clean and green' reputation of Victoria's dairy, beef, sheep and vegetable growing industries, for the domestic and export markets,  
the industry now creates its own 'workers camps' for FIFO (fly in fly out) workers. These camps provide all meals and accommodation for the miners leaving nil economic benefits for the local businesses, and

the negative impact upon property values, leaving land and property owners with assets that become severely devalued.

**The poor history of the unconventional gas industry in regard to regulatory safeguards for all aspects of its operations** are a concern for all residents.

How can communities trust an industry that has used questionable methods of dealing with its waste fluids. (3)

**Conclusion:**

The long term devastation left in the wake of unconventional gas mining has been demonstrated clearly in the United States and as this industry gains momentum in Australia we see Queensland and New South Wales repeating those same mistakes. The relatively short term gains which are made by a very few in this industry do not mitigate the long term risks outlined above and by the many submissions to this inquiry.

I thank you for taking the time to consider this submission and welcome the opportunity to provide further clarification or information if need be.

Heather Beale,  
On behalf of nogasfieldsforbirregurra

## References:

(1) Water for mining and unconventional gas under the National Water Initiative. National Water Commission 2014. NWC, Canberra.

<http://www.groundwater.com.au/media/W1siZiIsIjIwMTQvMDMvMjUvMDFfNTFfMTNfMTMzX0dyb3VuZhdhdGVyX2luX0F1c3RyYWxpYV9GSU5BTF9mb3Jfd2ViLnBkZiJdXQ/Groundwater%20in%20Australia%20FINAL%20for%20web.pdf>

(2) Groundwater in Australia. The National Centre for Groundwater Research and Training C/Flinders University. Nikki Harrington and Peter Cook. 2014

[http://www.nwc.gov.au/\\_data/assets/pdf\\_file/0008/37691/Water-for-mining-and-unconventional-gas-under-the-National-Water-Initiative.pdf](http://www.nwc.gov.au/_data/assets/pdf_file/0008/37691/Water-for-mining-and-unconventional-gas-under-the-National-Water-Initiative.pdf)

(3) <http://www.abc.net.au/news/2014-12-19/company-fined-for-dumping-csg-fracking-water-from-agl-site-in-n/5978776>