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To whom it may concern,

The issue of unconventional gas is one that is complex and yet simple at the same time.

The process uses advance technology, is highly regarded as a tremendous industry by gas companies, and is promoted as a saviour for our economy. But quiet simply it is an industry putting everyday Australians in a risky environment, where once a 'mistake' is made, it is too late.

I truly hope that common sense is applied here, where evidence in NSW and QLD suggests the industry cannot be trusted and as all industries do, come with risks.

Are these 'risks' worth it?

One major risks that communities are worried about is the co-produced water or waste water that flows back up from extraction.

*Wastewater poses a risk to the environment and health through leaks and spills. These happen with frightening regularity – they do not just pose a threat to people's health and the environment but also present a serious risk to farmland and livestock.*

*CSG extraction has the potential to cause harm to the environment, farming land, water resources and human health. August survey respondents raised all these concerns and the available evidence suggests they have good reason to be worried. The lack of research that has been done into the environmental and health impacts of CSG is alarming. If the gas industry is keen to expand and the government wants it to, then it should commit far more funding to quality research in this area.* Australian Institute, Matt Grudnoff, March 2014

*Cumulative impacts on water quality at a landscape scale are not well understood. Even when individual discharges meet relevant guidelines the cumulative impact associated with increasing load contributions such as salts, nutrients or heavy metals may have significant downstream impacts. There are significant knowledge gaps in the understanding of how cumulative water quality impacts develop in river systems, whether systems are able to assimilate multiple impacts and what critical thresholds apply for capping cumulative loads.* Independent Expert Scientific Committee, 2014.

While waste water is a major concern, the amount of water needed for this industry is alarming. We all know too well that this continent is dry and prone to drought. Where will the gas industry obtain this water? *When groundwater is extracted from an aquifer there are potential impacts on other water resources, depending on the duration and rate of extraction, and the connectivity (or degree of connection) between the water resources.* Independent Expert Scientific Committee, 2014

As the fracking process involves sand, water and chemicals to extract gas, it is the list of chemicals, that frighten communities and how these may affect the environment and people health .

These concerns about CSG were important enough for the Australian Medical Association to pass a resolution saying: *... all future proposals for coal seam gas mining are subject to rigorous and independent health risk assessments, which take into account the potential for exposure to pollutants through air and groundwater and any likely associated health risks. In circumstances where there is insufficient evidence to ensure safety, the precautionary principle should apply.*

Lloyd-Smith and Senjen (2011) found that even though they might be in low concentrations, the effect of the complex mixture of chemicals on the environment was not well understood and there were no water quality guidelines for many of the compounds. Many of the chemical compounds have demonstrated human health effects - for example, skin exposure to sodium persulfate can lead to sensitisation, ethylene glycol is a respiratory toxicant, naphthalene is a potential human carcinogen and isopropanol is a reproductive toxicant (Lloyd-Smith & Senjen 2011).

One argument to support the industry is job creation. In 2012–13, total employment averaged 266 000 in the resources sector, including in minerals and petroleum exploration, extraction and associated services. The resources sector accounted for 2.3% of national employment. *Minerals And Petroleum In Australia A Guide For Investors, Australian Government, 2011*

Another report recently made by the Independent Expert Scientific Committee Bore integrity, June 2014, stated that

There are no specific standards or guidelines relating to coal seam gas well integrity in Victoria.

This is very worrying. In the same report it discusses legacy bores. I would like to know what number of legacy bore exist in Victoria, and as you read below, the direct impact a legacy bore could have in our community. If we had a ‘flare up’ in the Otway ranges in summer, it would be a disaster.

*Bores that are not decommissioned appropriately are often referred to as ‘legacy bores’ and their number in Australia is not known but likely to be substantial. Legacy bores can be any type of bore, although the most common types are:*

- *oil and gas wells*
- *water supply bores*
- *coal exploration wells*
- *state government owned bores*
- *government exploration bores.*

*There are several significant implications of legacy bores, including:*

- *localised connectivity of aquifers, which can have further detrimental implications on local groundwater quality*
- *potential direct access between the ground surface and the aquifer, which is therefore a potential source of aquifer contamination*
- *potential to release fugitive gas emissions as potential coal seam gas bearing layers are depressurised and release gas, which can ignite.*

*At the time of writing there was little or no information available in the public domain on legacy bores. However, discussions with representatives at the Queensland government Department of Natural Resources and Mines (DNRM) highlighted that this information may be available in company reports and paper-based bore log records (Free 2013, pers. comm., 28 February).*

*In Queensland, legacy bores are likely to exist from all types of bores; however, coal exploration wells are the most significant legacy type for Queensland, largely due to their abundance and possible lack of appropriate decommissioning, both of which is at this stage unquantified. It has been estimated some 30 000 coal exploration wells have been drilled in the Surat Basin, with a further 100 000 in the Bowen Basin (Free 2013, pers. comm., 28 February). It is unknown however how many of the bores were decommissioned or, if they were decommissioned, the standard of the decommissioning work.*

*An example of a coal mining exploration bore that was not decommissioned appropriately was reported in the media in August 2012 (Kennedy 2012). The media report stated that the exploration bore was found after it caught on fire and started a local bushfire (Figure 15). The exploration bore, located 25 km west of Dalby in Queensland within Arrow Energy's Daandine gas field but not installed or used by Arrow Energy, was at least 1 km from any coal seam gas activity and leaking gas, which caught fire (Kennedy 2012). The fire was reported to have been 1 to 2 m high in a depressed section of earth about 50 cm deep and wide (Kennedy 2012). The well was presumed to have been drilled at least 20 years ago. The fire was extinguished by filling the hole with water and the site was then monitored for 24 hours while it was allowed to cool. Following cooling, the bore and surrounding area was filled with concrete (Rowling 2012).*

*Information on well integrity is documented for the petroleum and gas industry. However, at the time of writing there was very limited information in the public domain on bore integrity for the water and mining industries. GHD (2010) highlighted the lack of information in the public domain on existing bore condition assessment and, with limited*

*access to existing groundwater databases, relied heavily on sourcing information from stakeholders. However, GHD reported a similar scarcity of information or reports on bore condition assessment from stakeholders. Some jurisdictions do have reporting requirements when decommissioning bores; for example, in South Australia a well construction permit is required for the decommissioning of a well and a well construction report is to be submitted on completion of the works. However, this is not the case in all jurisdictions and information on bore integrity is not readily available.*

I have only documented a few of my concerns, but we are lucky in Victoria, we have the chance to stop this BEFORE it arrives. We have a chance to say NO! To say no, we will not put our residence and our environment at risk. In Victoria we are fortunate to have the climate for terrific agriculture. With the future projects I have seen in the paper (golden plains agriculture hub, Avalon intensive farming project, potential wheat silo's, and money invested into grain research) why are we even thinking about undoing all the progress in the agricultural industry. The idea that farming and the gas industry can co-exist is ridiculous.

This gas industry is forcing itself into our towns, to grab the gas from the ground to ship overseas, and will 'pack up' after 20-30years, leaving the Geelong and the Surfcoast communities with the clean up.

I have only touched on a few concerns and risks that come with this industry, but I hope, that common sense will prevail. The gas industry has no concern for the communities, they do not conduct proper community engagement, nor care about the communities they leave behind once operations cease.

In my community, gas companies have no social licence. The community does not want this industry. I also hope key decision makers will support communities and not let this industry divide towns.

Thank you for taking the time with this important issue,

