

Inquiry into Unconventional Gas in Victoria

We are the Meerlieu & District branch of the Bairnsdale Gas Field Free Group, and we would like to make a submission to the Victorian State Government's Inquiry into unconventional gas (UCG). We are farmers living in the districts of Perry Bridge, Meerlieu, Bengworden & Goon Nure. We are 4 localities, spread across two different shires (Wellington and East Gippsland), but we residents have always viewed ourselves as one district, with a very strong sense of community. This farming community produces beef, wool, sheep, milk, fodder and grain crops, potatoes, other vegetables, as well as pigs, eggs and turf-farming. The agricultural produce of this area is significant, both for the domestic and export market. The vast majority of farmers in this district are dependent on farming as their primary source of income. Many farmers have millions of dollars invested in their farming businesses.

Farming in this district is TOTALLY dependent on continued access to good quality groundwater. **ANY contamination of the groundwater would mean the end of farming in this area.**

Mining licences currently cover all the agricultural land in our district. Last year we surveyed almost all the residents in these localities about the possibility of unconventional gas mining occurring in our region.

In 2014 a survey was done in the localities of Goon Nure, Bengworden, Meerlieu and Perry Bridge. Over 450 people were surveyed.

Over 98% have said that they do NOT want onshore unconventional gas mining.

We believe it would be disastrous for any form of agriculture to allow onshore unconventional gas (UCG) drilling in Victoria, and we strongly urge the Government to place an outright and permanent ban on all forms of UCG mining.

Agriculture and its associated food processing are very important in Victoria. Our agricultural products around the world have a "Clean Green" image which, once lost, would be impossible to regain. UCG mining will industrialise the landscape, and have enormous impact on farmers, other rural land dwellers and people in adjacent areas. The Australian Medical Association (AMA) has raised serious concerns about significant public health impacts from the chemicals used in UCG mining, especially when drilling companies are not required to disclose what chemicals are used during the extraction process.

Contrary to what the UCG industry would like everyone to believe, many wells fail during the life of the minefield, and ALL wells fail eventually. Throughout all mankind's history, any manmade structure will fail if not constantly maintained. The average life of an UCG minefield is about 15 years, and then the wells are simply capped and left behind. ALL these wells will eventually fail, leaking their contaminated water into the underground aquifers.

If the UCG industry had nothing to hide, why do farmers have to sign "Non Disclosure" agreements, which means that farmers cannot raise any issues or concerns with anyone other than the mining company? Why do mining companies have no obligation to disclose what chemicals are used during the extraction process?

Many politicians, and some people supposedly representing farmers, argue that farmers should be allowed to have the choice of either granting, or refusing, permission for a mining company to mine for gas on their farm. However, unlike other uses of land, when mining companies put in wells for unconventional gas mining, there will be serious effects on ALL the farms in the area, whether or not the other farmers have given their permission or not. Contamination of the groundwater through just ONE well would have a devastating effect on the groundwater of the whole region, destroying the land for agriculture in the future. **It is NOT safe to allow even one well in a region.** The government needs to protect the quality of groundwater and farming land for current and future agricultural uses. Once this quality is lost, it CANNOT be regained.

Another major problem is that while there are mining licences held over their farms, and the potential threat of an UCG industry destroying their livelihood, farmers are understandably reluctant to invest in & expand their businesses. Young people are very reluctant to return home to work on family farms, when they are unsure if there is any future in agriculture for them. The flow-on effects through agribusiness occur as well, affecting growth, investments & jobs. **This problem will NOT go away until UCG drilling is TOTALLY BANNED IN VICTORIA.**

And finally, we point out that this industry **does not** have a social license to operate, as shown by the 60+ community declarations that have already happened across southern Victoria.

We strongly urge you to recommend that Victoria ban all unconventional gas drilling permanently.

In this submission we will limit our comments to the terms of reference that are most relevant to our farming & rural community.

Comments on the terms of reference

1. The prospectivity of Victoria's geology for commercial sources of onshore unconventional gas;

Numerous companies have been searching for commercial quantities of unconventional gas resources such as Tight Gas for several decades. Despite all this work, and despite regular announcements from some companies that commercialisation is imminent, there was no commercial production in Victoria prior to the moratorium being announced. Given this fact, it is quite likely that the resource will prove to be only marginally viable in commercial terms. As a result, return to the state via royalties can be expected to be negligible, especially when considered against the possible negative impacts on agricultural production.

The parts of Victoria with mining licences for UCG resources are from Metung in East Gippsland through to the South Australian border, mostly in the southern part of the state. This is prime grazing and dairy country, and a considerable portion of our fruit and vegetable production.

Why would we consider putting some of our best farmland at risk by allowing this industry to proceed for only minimal royalty returns to the state?

2. The environmental, land productivity and public health risks, risk mitigations and residual risks of onshore unconventional gas activities;

Responsible decision making where risk is involved and science is uncertain requires the application of the precautionary principle. It is clear that many problems with the industry may take years, and potentially decades, to be fully understood. It would be reckless to unleash this industry on our state with all the evidence that is emerging about contamination events associated with UCG drilling.

Settlement Dams or Produced Water

- Enormous volumes of water are extracted from below ground before gas can be extracted. This water, together with toxic chemicals used and/or released in the extraction process, is pumped into settlement dams. This water is also extremely saline.
- These dams are often simply lined with black plastic. Tears are frequent, allowing the toxic mix to seep back into the soil, causing contamination of the soil and the groundwater.
- These dams are huge and very deep. They pose a deadly health risk, with the potential for people and/or livestock falling into these dams.
- These are permanent dams that will be left forever, so the health risk never goes away.
- Floods, which occur in this area at frequent intervals, can have rainfall of 150 – 350mm over a few days. This would lead to massive overflow of these dams, and serious contamination of the surrounding areas. All runoff from this area ends up in the Gippsland Lakes, with contamination having a drastic effect on people, wildlife, fish stock & tourism.
- Despite assurances from the UCG industry, seepage from these dams into the ground & hence the groundwater will eventually occur.

Risks to the health of our creeks, rivers and the Gippsland Lakes

- Exploration licences extend to the very edge of the Gippsland Lakes.
- Allowing this industry to operate across the catchment of the lakes would be both reckless and irresponsible.

Health Issues Associated with Fugitive Gas Emissions and Fracking Chemicals

- Even though methane itself is lighter than air and migrates upwards rather than concentrates at ground level, other heavier hydrocarbons are released from deep below the earth with the methane. These include benzene, toluene, ethyl benzene, xylene – the BTEX chemicals, VOCs – Volatile Organic Chemicals and PAH's – Polycyclic Aromatic Hydrocarbons. All of these chemicals affect the respiratory system, 25% are carcinogenic, 37% affect the endocrine system, 52% affect the nervous system and 40% affect the immune system.
- Heavy metals and radioactive nucleotides have also found their way to the surface from deep in the earth.
- In Queensland many people living in the middle of gasfields are reporting serious health issues, especially in children. Nosebleeds, headaches and general feelings of being unwell are continually reported.
- The Australian Medical Association (AMA) has raised serious concerns about health risks from chemicals used in CSG mining operations, especially long-term effects. They have called on the Australian Government to force mining companies to disclose what chemicals are being used in the UCG industry.

- In Australia mining companies are **NOT** required to disclose what chemicals are being used during extraction.
- Doctors for the Environment point out that a range of hazardous chemicals are reported to be used in Australian fracking operations for UCG including 2-butoxyethanol and ethylene glycol.
- Research compiled by Doctors for the Environment found that 2-butoxyethanol is easily absorbed and rapidly distributed in the human body and is particularly toxic to red blood cells, carrying the risk of haemolysis, and damage to spleen, liver and bone marrow. Ethylene glycol is used to make anti-freeze and when ethylene glycol breaks down in the body it can affect kidney function as well as the nervous system, lungs and heart.

Soil Contamination

- The above chemicals are not naturally found in soil and many of them end up residing in the top soil and entering the eco-system, affecting all life from microbial activity to high order animals including stock.
- Salt is another by-product of coal seam gas operations and can have a number of adverse impacts if it enters the surrounding environment. This is a particularly pertinent issue in agricultural areas where salt can permanently damage high quality soils and take them out of production. It is estimated that tens of millions of tonnes of salt will be produced as a waste product of coal seam gas operations over a 30-year period. At this stage coal seam gas companies do not know how they will dispose of this salt.

Land Subsidence and Reactivation of Fault Lines due to Fracking and the Extraction of Water and Gas.

- Whenever water is extracted from below the surface of the earth or when it is recharging the underground with “produced water”, the pressure gradients created have the potential to cause faulting of the area and hence produce earth quakes.
- There have been well documented cases in the USA, England and Holland, where tremors of 2 - 3 on the Richter scale have been caused by CSG mining, with England now introducing a moratorium on CSG drilling. Many of the places experiencing tremors are in areas where earth tremors have been hitherto unknown.
- In the USA some towns have had whole streets of housing subside, with no compensation for homeowners.
- These subsidence problems continue to be a problem long after mining ceases.

Other environmental & land productivity issues will be discussed in detail under Section 3, below.

3. The coexistence of onshore unconventional gas activities with existing land and water uses, including (a) agricultural production and domestic and export market requirements;

Aquifer and Ground Water Contamination

- Because the wells access coal seams, which often lie below an aquifer, the aquifers are pierced by the drilling of the wells.
- The casing of the well is filled with concrete, but this is corroded over time by the gas and other chemicals contained in the coal seam and fracking fluids. Eventually, the gas will migrate up along the casing and into the aquifer and ground water, infusing this hitherto reliably pure water with hydrocarbon, heavy metal and radioactive contamination
- “Produced” water is water extracted from the coal seam prior to extraction of the gas, and is hence full of hydrocarbons and pollutants. It is a waste product from the process, usually saline. Normally stored in large settlement dams, any leakage or overflow seeps into the ground & hence into the aquifer.
- Cattle in affected areas of Qld have refused to drink the bore water that has been contaminated by CSG operations.
- **Any contamination of groundwater in this area means the end of farming here.** Farming in this area is TOTALLY reliant on access to good quality groundwater.
- The vast majority of people living in this area rely on borewater for domestic use, with many places using only bore water for drinking. Any contamination of groundwater will put the health of these people at serious risk, both short & long term.

Competition for Water Reserves & Ground Water Diminished

- As the extraction process involves pumping enormous amounts of clean water back into the wells, many bores in UCG affected areas have gone dry or the water has to be obtained from further down. If our existing bores run dry, put in at our own cost, WHO PAYS?

- This is a massive disruption to the natural ground water supply.
- The local aquifers are already oversubscribed. Farmers are currently unable to get new or increased water licences, let alone irrigation licences. The UCG industry requires massive amounts of water. How can Mining Companies suddenly get access to vast quantities of water?

Biosecurity Issues

- Footrot in sheep, Bovine & Ovine Johnes Disease are all notifiable diseases. All of these diseases can be easily spread by people & vehicles driving from farm to farm, and around a farm. Meat & Livestock Australia (MLA) warn strongly against outside people & vehicles driving onto and around farms.
- There are huge costs and enormous amounts of time involved with controlling & eradicating these diseases from a property. All costs and work in doing so fall onto the farmer.
- Once a disease gets onto a property, quarantine measures drastically restrict how a farmer can market his livestock, with serious consequences on a farm's profitability. Anyone running a stud farm cannot sell their rams &/or bulls, nor their female stock.
- Even if mining companies give assurances that equipment and people will be de-contaminated before moving between & around farms, etc. there have been serious breaches of rules by contractors. Farmers are the ones who bear the costs.
- How can farmers afford to take mining companies to court over these issues? Who pays?

An example of breakdown in Biosecurity happened in this district during the 1980s. Beach Petroleum had a licence to conduct tests throughout this area, looking for oil. The company followed a grid pattern through the whole area. At a set distance along the gridlines a test hole (about 4 inches in circumference) was drilled. The gridlines were in straight lines, so the contractors simply cut fences as they went, including boundary fences between neighbouring properties.

At the time footrot was prevalent on some properties throughout the district. Footrot in sheep is a difficult & very expensive disease. It is an extremely time-consuming & very costly disease to control, let alone try to eradicate. Footrot can be spread by people & machinery, from sheep mob to sheep mob, and between farms. Sheep with footrot cannot be sold in saleyards; they can only be sold directly to an abattoir, at a much lower price than through the auction system. Anyone running a sheep stud cannot sell their stud stock.

Naturally framers who were footrot-free were very concerned about mining contractors spreading the disease as they moved people & machinery from property to property. Beach Petroleum gave very clear assurances at public meetings that all contractors working for them would be working at the highest standards, all people & machinery moving between paddocks & properties would wash down boots, machinery tyres, etc. with formalin before moving through fences. Farmers were repeatedly assured that no-one would get footrot or any other diseases from the work being done by Beach Petroleum. Farmers were given a phone number to ring if they spotted any breaches in Biosecurity by contractors.

What a farce! Contractors were negligent to the extreme, with minimal or no attempt to control disease spread between paddocks & properties. When farmers tried to report any breaches of conduct they found no-one answered the phone number they were given. Any attempts to reach Beach Petroleum management were stymied. Police, local government, State & Federal politicians were not interested. As a consequence of the Biosecurity breakdowns many local farmers got footrot, and were left with a disease problem that took years to eradicate from their properties. Their profitability was significantly affected through labour & treatment costs, and reduced marketing options. Sheep studs could not sell their breeding stock.

The Livestock Production Assurance (LPA) Program & National Vendor Declarations (NVDs)

The following information is taken directly from the Meat & Livestock Australia (MLA)'s website:-

- *The Livestock Production Assurance (LPA) program is run by the Meat & Livestock Australia (MLA). It is a pledge by farmers that the meat from their farm has been produced safely. An LPA accreditation means a farmer stands by what they sell.*
- *When a farmer ticks the box on their National Vendor Declaration form, they are guaranteeing their on-farm practices meet LPA requirements. Their tick must be backed up by accurate farm records.*
- *As industry's on-farm food safety program, LPA meets the stringent requirements of domestic and export markets, providing assurance of the safety of Australian beef, lamb and goat meat.*
- *The LPA National Vendor Declaration (LPA NVD) is the main document behind Australia's meat and livestock food safety reputation.*
- *LPA NVDs are required for any movement of stock – to processors, to saleyards or between properties if they have different Property Identification Codes (PICs).*

- When an LPA NVD is signed, the producer is sharing information on livestock history and declaring compliance with all LPA requirements.
- LPA NVDs have two purposes: 1) In completing and signing the LPA NVD, the seller provides the buyer with a guarantee relating to the food safety status of the animals they are purchasing. 2) The LPA NVD enables livestock movements to be traced if necessary
- Producers who become LPA-accredited commit to carrying out specific on-farm practices in order to fulfil their responsibility to produce safe red meat. LPA covers on-farm practices in five key areas:

A) [Property risk assessments](#)

Producer responsibility: To minimise the risk of livestock being exposed to sites that are unacceptably contaminated with persistent chemicals or physical contaminants

B) [Safe and responsible animal treatments](#)

Producer responsibility: To ensure animal treatments are administered in a safe and responsible manner that minimises the risk of chemical residues and physical hazards

C) [Stock foods, fodder crops, grain and pasture treatments](#)

Producer responsibility: To minimise exposure of livestock to foods containing unacceptable chemical contamination and guarantee livestock are not fed animal products

D) [Preparation for dispatch of livestock](#)

Producer responsibility: To ensure livestock are fit for transport and minimise the risk of stress and contamination of livestock during assembly and transport

E) [Livestock transactions and movements](#)

Producer responsibility: To ensure traceability requirements, with respect to treatments or exposure to food safety hazards, have been fulfilled for all livestock movements - between farms and feedlots, and including to slaughter and live export.

N.B. How can farmers fulfil their LPA-accreditations when they:-

- Have mining contractors with unrestricted access, 24 hours a day, 365 days a year, onto and around their properties?
- When farmers are not kept informed of what other properties these contractors have been on, and the disease status of these other properties?
- When farmers have no real idea of whether or not contractors are strictly following Biosecurity measures agreed to by the mining companies?
- How do farmers assess the Property Risks & Chemical Contamination issues of their own farms when mining companies do NOT have to disclose what chemicals they are using during the extraction process in wells around the farm?
- If there are disease problems introduced by contractors to a previously disease-free property, how is a farmer expected to know this when he is filling in his NVDs? What are the ramifications for the farmer and the whole meat supply chain?
- How does a farmer know if his pastures have been chemically contaminated by UCG activities on his place, when such contaminations are usually hushed up & denied by mining companies? If livestock are grazing on contaminated pastures unbeknown to the farmer, how is he expected to fill in his NVDs properly, when he does NOT even know what chemicals are being used on his property? If there is a comeback on the farmer for contamination, who pays?
- Who pays when there are Biosecurity breaches?

Introduction of New Weed Infestations

- In many cases, the drilling equipment for wells has been used in other areas and has not been cleaned properly and carries seeds of weeds unseen in these areas, causing a breakout of exotic weeds.
- Various local weeds, such as African Lovegrass & Serrated Tussock are easily spread farm to farm, roadside to farm, and paddock to paddock by vehicles & people.
- Due to the limited access to certain parts of the farm, weed control by the usual methods of grazing and spot control is restricted, thus ensuring a seed bank of weeds to spread onto the productive parts of the farm.
- In QLD there is a court case over the spread of African Lovegrass, by mining contractors, onto a property.
- How can farmers afford to take mining companies to court over these issues? Who pays?

Loss of Control of your Farming Business operations

- Massive infrastructure of all weather roads, pipelines, drilling pads, etc. would have a drastic effect on existing farm layout, irrigation, movement & management of livestock, cropping & fodder conservation.
- Farmers have no say in where wells, pipelines & roads are put.
- This area produces significant amounts of wool, from merinos. Merino ewes are notoriously bad mothers, it takes very little to frighten a ewe and make her abandon her lamb. The noise, lights, gas flare-offs, movement of mining vehicles and people would all be very disruptive to many animals. Mis-mothering of merino lambs would cause significant reduction in farm profitability.
- On a 100 hectare farm there could be up to 8 wells. Each well has two pipelines connected to it. One for water and one for the gas.
- Each pipeline is usually buried, but limits use of land above it. Effectively about 25% of the land is unusable.
- All agreements that a farmer signs with a drilling company, will bind future buyers of your land or parcels of land you may want to sell or purchase.
- Some farmers are unable to get farm insurance if they have CSG wells on their property.
- No-one proposes to build a gas minefield in the middle of a factory, a suburban housing block, a city apartment block, or a shopping centre. So why are farmers expected to put up with something that no-one else would tolerate "in their backyard"?

Fire Risk

- Fugitive emissions are a constant feature of CSG fields.
- Methane and other combustible hydrocarbons escape from exits points, eg. cracks in the Earth and in rivers.
- Lightning or human carelessness can cause these emissions to ignite, which has already been recorded.
- The flaring must continue at all times - even on Total Fire Ban days as was the case recently in NSW. The temperature in Sydney was 45 °C and Catastrophic on the fire danger scale, yet the flaring was still allowed to continue.
- Gas fires require specialist equipment to extinguish them. The mining companies do NOT provide any form of fire fighting. How does the local CFA feel about being called out to a CSG fire? Who pays? Not the mining company!

Tainting of Food Produced on the Land

- Food grown in contaminated soil will also be contaminated.
- In the USA, milk from farms in a CSG area was found to contain aromatic hydrocarbons and rejected for human consumption.
- The polluters, in this case the CSG producers, are not held accountable. It is the farmers that can be sued or at least blamed for selling contaminated food to the public.
- There are many cases of cattle and other livestock unable to thrive because of the air and soil pollution.
- There have been cases of cattle deaths attributed to CSG poisoning in the U.S.A.

Destroying Brand Gippsland

- Having UCG mining anywhere in Gippsland will tarnish the region's image as a clean, uncontaminated producer of fine food. Once lost, the "Clean Green" image for our products is gone forever.
- We can't ask premium prices for our products if consumers do not have a positive image of the area.

Failure of Wells

- Contrary to what the UCG industry would like everyone to believe, many wells fail during the life of the minefield, and ALL wells fail eventually. Six percent of wells fail in the first year of use, with the number increasing each year.
- Throughout all mankind's history, any manmade structure will fail if not constantly maintained. The average life of an UCG minefield is about 15 years, and then the wells are simply capped and left behind. **ALL these wells will eventually fail, leaking their contaminated water into the underground aquifers.**
- It would take only one well to fail to contaminate our precious groundwater. The risks are just too high to allow this industry into Victoria.

(b) The legal rights of property owners and the impact on property values;**Legal Rights of Landholders**

- All agreements between a farmer and an UCG mining company are conducted in secret. Farmers have to sign “Non Disclosure” agreements, which means that if they have any issues with what is happening on their land, they can only raise it with the mining company. If there are unresolved problems, serious breaches of contracts, etc., a farmer has no-one else to turn to. Individual farmers are not in a financial position to take a multi-national mining company to court over breaches in their contract. They get no help from governments who are supposed to protect them.
- The majority of work done in setting up the required infrastructure for an UCG industry (drill pads, wells, pipelines, etc.) is done by contractors. Despite all the assurances given by mining companies, many of these people do NOT uphold the levels of care that the mining company has agreed to with a farmer. This is especially important with Biosecurity issues raised under Section 3. (a). Landholders who complain about breaches in work being done are ignored and have no-one to turn to for help.
- Many of the problems associated with UCG extraction are long-term problems. Once a mining company has finished their gas extraction and left a district, who pays for any problems that occur after they have left? These long-term problems include failure & collapse of capped wells leaking into & contaminating groundwater, failure of & overflow of settlement ponds & the leaking of contaminated water into the soil, subsidence issues, spread of livestock disease & weed seed due to breakdown in Biosecurity measures, removal of the massive infrastructure required for the mining process, earth tremors caused by the mining process, ill health in people who have had to live in the middle of a gasfield. Who pays for the problems that continue to arise?

Fall in Land Values

- Land Values have dropped by an average of 12% in districts of NSW and Queensland, as soon as a CSG project is announced.
- At Tara and Chinchilla in QLD, more than 50% of the farms are for sale. No one wants to buy a property that has been tainted by CSG. No one will buy a farm in a CSG area.
- Some people suggest that the compensation (lease) from the gas company might offer farmers an income so that they could ease into retirement, and that selling the farm in 10 or 20 years time will be their super. This is just flawed thinking. No one can sell their farm for a decent price with CSG on it.
- In most cases the compensation paid to farmers is minimal and does not even cover the lost yearly production, much less the drop in land value.
- Even if a farmer does not allow a mining company onto their place, and they are receiving NOTHING in compensation, their property value will fall dramatically simply because it is in a minefield.
- Banks are refusing farmers loans near QLD gas fields because they are considered “high risk”.

Liveability Issues – Living in the middle of a Gasfield: 24 hour noise, dust and light pollution at night

- The extraction of gas from the coal seam is an industrial process. It requires pumping of water out of the coal seams to release the gas. The “produced” water is often salty, requiring desalination. The salt is kept on site or put into settling ponds to evaporate off.
- The substantial earth works creates mud when wet and dust in dry weather.
- The pumping, digging, desalination and flaring creates industrial level noise around the clock.
- A flaring pipe which burns unwanted combustible chemicals is required for every cluster of well heads. These flaring pipes must burn 24 hours a day in all weather conditions, creating noxious gas emissions and light pollution at night time.
- The considerable noise, dust, flaring and light pollution are present 24 hours a day, 7 days a week, 365 days a year. It never goes away.

(c) any implications for local and regional development, investment and jobs;**The Industrialisation of the landscape & Disruption to Local Communities**

- UCG activity require access roads, drill pads and processing equipment, waste ponds and water treatment sites, desalination plants, flaring pits, and pipelines. It will profoundly change the rural nature of the areas where it is allowed to become established.

- Many areas in the southern part of Victoria are experiencing steady population growth, especially as the state government encourages people to move to regional areas. Many country areas are being actively promoted to the retirement market. These people do not want to move in to an industrialised landscape.
- Local communities expecting to benefit from jobs growth and increasing demand for the local services sector have been very disappointed.
- Much of the CSG work force is not local people, but people who drive in/drive out, or fly in/fly out.
- Single men are often housed in working men's accommodation a long way from towns and all their catering is done by sub-contractors sourcing their food, etc. from the big cities, NOT locally.
- It is well documented that Fly In Fly Out workers (the main workforce for the UCG industry) are exhibiting an enormous number of health & mental problems.
- Many country towns are already struggling to source doctors, dentists and other healthcare professionals to care for their current populations. Many country hospitals are already strain to provide services, especially as increasing numbers of older aged retirees are encouraged to settle in country areas. A massive influx of workers associated with an UCG industry would create huge strains on a health system under enormous pressure.
- Sexual assaults have increased in the mining towns.
- Divisions have emerged in communities between those who allowed the drilling and those who did not.
- Small country towns are not pleasant places to live any more. It is hard for the long term locals and very off-putting for the lifestyle retiree who would otherwise settle in a rural community.

Transport on Country Roads

- In areas of QLD affected by CSG production, endless convoys of drilling rigs and large semi-trailers carrying compressors, generators, desalination units, tankers full of highly toxic chemicals and enormous lengths of pipe have turned country roads into dangerous, high risk areas for local drivers. Roads are crumbling under this onslaught.

Employment Opportunities

- Mining companies grossly exaggerate the number of jobs created by UCG mining.
- Many of the jobs require specialist skills, not available in local rural communities & regional centres. Most of the workers will be "Fly In Fly Out" (FIFO). Experience in other UCG mining areas shows that there are few new jobs for local people.
- In the ABC "Landline" program, screened on Sunday 28th June 2015, there was a segment called "After the Gas Rush". It looked at how quickly the jobs created in the UCG industry have been lost. Most of the construction phase has now finished, and more than three-quarters of the jobs have gone. The industry has moved into maintenance phase, requiring far less jobs than the mining companies portray. Many of the businesses, like hotels & caravan parks, that did profit from a short-term boom, are finding things extremely tough, as business has fallen off dramatically. They had been led to believe that the "good times" would last much longer.
- Job creation promoted strongly by the mining companies is misleading. Many companies provide the accommodation, food, etc. for its FIFO workforce, with little or no benefit to local businesses.

The Impact on Agricultural Production & the Consequences for Domestic & Export Economies

A key factor in deciding whether or not we allow the UCG industry to become established in Victoria is the question of its likely impacts on agricultural production.

- Victorian agriculture produces goods valued at around \$9 billion a year (2010/11). This has grown from \$6.56 billion in 2007-08. Victorian farmers do this with only around 3 per cent of Australia's arable land.
- Victoria produces 25% of Australia's total food exports and 28% of Australia's total wool and fibre exports.
- In Gippsland the dairy industry is the highest value agribusiness industry in the region. It is one of Australia's leading dairy regions, providing 23% of national milk production in 2011.
- Victoria's beef cattle industry generally supplies smaller, younger animals for the domestic market and also higher quality stock for the Japanese market.
- There is significant production of vegetables, fruit & wine in areas under mining licences.

Large sections of highly significant farmland is being considered for gas production. There are a range of reasons why UCG cannot co-exist peacefully with farming:

1. Contamination of groundwater

- Farming in this district is TOTALLY dependent on continued access to good quality groundwater. **ANY contamination of the groundwater would mean the end of farming in this area.**
- Based on the experience in Queensland, concerns about contamination of aquifers or surface water from mining operations can be expected to become significant once operations become established. The initial fear about UCG in Victoria was focused on CSG. The known contamination incidents in NSW and QLD are well documented. In the past two years, there has been growing concern about other forms of UCG, especially tight and shale gas. Industry proponents have been active in attempting to convince the community and local governments that tight and shale gas is fundamentally different to CSG and that fewer chemicals are used in the frack process and there is no risk of contamination. Where industry admits to contamination incidents, they are generally referred to 'legacy' problems, and the result of poorer management regimes in other countries or older and poorer drilling technology. The take home message from industry is that 'new' technology has made the process safe and that Australia has excellent regulatory regimes to safely manage the industry. However, globally, there is growing evidence of contamination incidents associated with shale and tight gas drilling as well.
- Researchers have traced low levels of methane and other contaminants to a source of shale gas in the sprawling Marcellus Formation, which lies beneath much of New York state, Pennsylvania, West Virginia and Ohio. Pennsylvania's Department of Environmental Protection has catalogued 243 cases of contamination of private drinking wells from oil and gas drilling operations. In some cases, one drilling operation contaminated the water of multiple wells, with water issues resulting from methane gas contamination, wastewater spills, and wells that simply went dry or undrinkable.
- There is also a fear of geo contamination – dangerous materials being brought to the surface in recovered water as a result of shale and gas fracking. These contaminants include heavy metals, naturally occurring radioactive materials (NORMs - including Radium, Thorium and Uranium), volatile and semi volatile organic compounds (VOC's) and high concentrations of salts.
- The Gippsland Water Atlas shows that aquifers that run from East Gippsland to the Latrobe Valley, almost 150 km away, are connected. Therefore any contamination from drilling or over allocation for mining can be expected to impact far beyond the local area. Obviously, once any form of chemical contamination occurs, it will be difficult, if not impossible to contain. The GWA notes that rates of decline of bore levels over large distances, for instance between Yarram and Bairnsdale are 'remarkably similar' (p57), highlighting the likelihood that impact at any point in the aquifer may impact a broad area.
- These aquifers lie under the Macalister Irrigation District (MID), the state's second largest irrigation zone, on the northern end of the Gippsland Plains, where Lakes Oil subsidiary Commonwealth is currently looking for brown coal. The MID has the highest concentration of ground water entitlements in Gippsland (GWA, p22). At present the aquifers are considered to be 'low salinity, high yielding alluvial aquifers' (p34).
- Well failure through blowouts, annular leakage (along the well) or radial leakage (perpendicular to well) is the primary cause of groundwater contamination from UCG production.
- An additional concern expressed by some rural communities is that groundwater could be contaminated by drilling lines intersecting with older, unmapped drill holes from previous agricultural activity. As noted by people like Kieran Kennedy, the former mayor of South Gippsland, there are many old and undocumented drill lines into aquifers which could potentially be breached by new drilling operations for mining.
- Despite regular assurances from industry, experience in the real world shows that contamination has, and does, occur. For instance, the National Toxics Network 16 reports that "methane can contaminate bores and water wells near gas wells. An analysis of 60 water wells near active gas wells in the US found most were contaminated with methane at levels well above US federal safety guidelines for methane. The majority of water wells situated one kilometre or less from a gas well, contained water contaminated with 19 to 64 parts per million (ppm) of methane. Wells more than a kilometre from active gas had only a few parts per million of methane in their water".
- There has been substantial concern in the community about the possibility of contamination from BTEX chemicals (the chemicals benzene, toluene, ethylbenzene and xylene).
- These compounds occur naturally in crude oil and can be found in sea water in the vicinity of natural gas and petroleum deposits. Benzene is a known carcinogen. According to the National Toxics Network¹⁷, "the fracking process itself can release BTEX from the natural-gas reservoirs, which may allow them to disperse into the groundwater aquifers or to volatilise into air. People may be exposed to BTEX chemicals by drinking."
- The use of BTEX chemicals is currently banned in Victoria. Even where no dangerous chemicals are used in gas operations, there is the fear that accessing and fracturing coal seams will release potentially dangerous

materials (including those in the BTEX group) which are currently safely trapped deep underground. These could be brought to the surface in the recovered water.

2. Competition for water

- Mining coal and gas (and especially UCG) is a very water intensive process. With the prospect of an expanding mining sector, fossil fuels and agriculture can be expected to be in increasing conflict over limited water supplies in coming years.
- It can be argued that when recharge rates are considered, many aquifers in Victoria are already over committed. Additionally, there are already substantial concerns about subsidence and over use of aquifers across Gippsland as a result of mining activity.
- As reported in the Gippsland Farmer (October 2012), water levels at ‘irrigation bores had dropped 10 metres since the turn of the century’ and are ‘largely attributable to ongoing offshore oil and gas industry operations’. This has already cost farmers in affected areas because of the need to drill deeper to maintain water supplies. Efforts by Yarram farmer Bill Bodman resulted in a \$5 million compensation package to irrigators in the Yarram and Bairnsdale areas affected by falling water levels, to help them upgrade pumping equipment. Who will be responsible for farmers having to spend more to access groundwater should an UCG industry be allowed to become established?
- As is noted in the Gippsland Water Atlas 5 (GWA), the offshore oil and gas industry withdraws a substantial volume of fluid (oil, gas and water) from the aquifer. This occurs outside the state’s jurisdiction and is not directly accounted for in state government water allocations, even though it is connected to the aquifer beneath Gippsland (GWA, p21). As noted in the GWA, ‘in coal, oil and gas extraction industries where ground water is used for operational purposes, its value is enormous compared with other uses’ (p27). Many farmers already struggle with high production costs and downward pressure on farm gate prices for their product. If miners, in effect, drive up water prices, this will impact on farmers who need to buy water allocations. With the probable localised nature of any UCG production, this could cause pockets of hardship for agricultural producers unlucky enough to have gas production in their immediate area, although impacts are likely to be felt over a much wider region over time because of the interconnected nature of key aquifers. While new water entitlements are difficult to obtain, existing entitlements may be traded where it is not used fully by the license holder. If miners are willing to pay good money for a farmer’s entitlement this could have negative impacts on farming output. Temporary transfers are fairly cheap. However if commercial production does occur, miners would need to organise a permanent transfer, which can be ten times more expensive (GWA, p27).
- It is likely that there will be localised economic competition for water between agricultural users and miners should gas production become commercialised. We really do not know how much mining and drilling the industry thinks it can get away with in Victoria. A number of the more aggressive companies now speak of ‘localised’ nodes of activity in places like Seaspray and inland from Port Campbell. A number of players in the UCG industry are quite secretive in regards to what their long term intentions are. What we do know is that fossil fuel production in the state already consumes vast quantities of water, especially in Gippsland. If new coal and gas operations do become established, the conflict for water between agriculture and mining can be expected to be the first point where sharp battle lines will be drawn.
- The question of how much water will be needed by industry will depend, of course, on how many drill operations are ultimately approved. A difficulty in assessing the likely impact of any approvals of UCG drilling is that there is a wide variety of opinions on just how much water is used. Something of considerable community concern is the process of hydraulic fracturing (‘fracking’) and apart from risks of chemical contamination, how much water is likely to be used with each frack operation. Additionally, there is the matter of how much water will be extracted from coal or other gas seams in the fracking process, and how this will affect the water table. As industry often explains, the process of fracking involves pumping a mixture of water, sand and chemicals into coal seams or rock in order to release methane gas. The mix is often referred to as being ‘98%’ water. According to Tina Hunter, an Assistant Professor at Bond University, “the fracking of one CSG well can require as much as 5 million litres (ML) of water, although often only 2 - 3 million litres of water is used. In this process, a high-pressure mix of water, sand and chemicals is injected into the reservoir to release gas”. Ms Hunter explains that “the same amount of water will return to the surface. When the water comes to the surface after fracking, it will in all probability have an increased salt content (brine water) and contain chemicals that were used in the fracking process”.
- Other forms of UCG also use substantial quantities of water in the drilling process. Shale and Tight Gas, which exist at deeper levels will need to be fracked, as confirmed by Lakes Oil in community consultations held in Victoria in early 2015. This means substantial volumes of water, even if fewer chemicals are used

in the frack mix compared with CSG. The company said that wells may be in use for up to 20 years, although main flow of gas is expected in the first few years of operation. The Australian gas industry provides a figure of 11 million litres per shale or tight gas frack, however, many other sources suggest higher levels of water use. One estimate of water use in shale gas frack operations was '20 ML per frack', with 'flow back rates of 10 to 70%' 11 Dr Damian Barrett from the CSIRO says that shale gas drilling is likely to use 7 to 15 ML of water per frack (and up to 25 ML). There could be several wells per pad, based on multiple horizontal drill lines, increasing the water consumption substantially. Like the water that is pumped into the ground as part of the frack to carry the sand and chemicals, this water will be contaminated with salts, whatever chemicals are used in the frack, and potentially any chemicals found in the coal seam itself. In the case of tight and shale gas, other potential contaminants from the frack mix could include biocides, corrosion inhibitors and friction reducers.

- The Gippsland Water Atlas produced by Southern Rural Water says that CSG is likely to “use 100 ML per year of groundwater per well to release the gas from the coal”. This water, which is pumped from above ground as part of the frack is most likely to come from existing surface or ground water supplies, which will need to be allocated by a water authority.
- Fracking will also bring water from the seams that are being drilled to the surface. The ABC has compiled likely water use from a variety of sources, and says: “In September 2010, the Water Group provided a report to (federal) Environment Minister Tony Burke that highlighted the wildly different estimates of water extraction and the limited amount of information that had so far been published. In an appendix, the Water Group cited comments from Origin Energy senior engineer Robert Kane which had been published in Gas Today in 2009”. Mr Kane was reported as saying that bores would extract between 0.1 megalitres a day and 0.8 mega-litres a day. A mega-litre is one million litres. He was referring to operations in Queensland, where the resource being drilled is black coal. Brown coal, which is primarily found in Victoria, is a wetter coal, which has a higher water content, so the average amount of water brought to the surface may be higher than in Queensland. To give a comparison, according to Melbourne Water, an average person in Melbourne consumes 277 litres a day. Mr Kane suggested a bore would have a production life of 15 years. It should be noted that these estimates are based on initial well flows extrapolated across the life of a bore, however flow rates fall significantly over time with repeated fracks.

3. Competition for Labour between Jobs in the Agricultural Industries & the Mining Industry

- Wherever UCG mining has occurred it has led to competition with other industries for labour.
- Mining has always been able to offer much larger wages than agriculture, leading to a significant loss of workers in agriculture.
- However, as shown above, the lure of jobs in the UCG industry is only short-term. Agriculture and its associated industries can offer much longer term jobs. This creates much more stable regional development & long-term growth for regional areas.

4. Increased seismic activity

- There are a number of geological risk factors which may affect future shale gas development in Australia. Induced seismicity from fracture propagation has been identified as a key risk by industry sources. To give one example: in the US, the Eola Field, Garvin County in South-Central Oklahoma, more than 50 earthquakes were detected on January 18, 2011, with 43 large enough to locate the epicentres. These earthquakes were associated with an active fracking project being conducted in a nearby well. Studies and investigations have subsequently showed that there was a clear correlation between injection and seismicity.
- Earthquakes can have significant effects on local towns, businesses, farms & domestic dwellings.

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 responses; and
- (b) performance standards for managing environmental and health risks, including water quality, air quality, chemical use, waste disposal, land contamination and geotechnical stability;

From the negative examples of UCG drilling elsewhere in Australia and around the world, we believe the best way to regulate this industry is to ban it. This is the simplest policy response. Many other jurisdictions have chosen to place an outright ban on UCG and/or the process of fracking. Some examples include:

Outright Fracking Bans

1. USA

New York – December 2014 – this was implemented on the basis of health risks after expert investigation and the publication of a New York State Department of Health Report.

http://www.nytimes.com/2014/12/18/nyregion/cuomo-to-ban-fracking-in-new-york-state-citing-health-risks.html?_r=0

https://www.health.ny.gov/press/reports/docs/high_volume_hydraulic_fracturing.pdf

San Benito County, California – April 2014 http://www.mercurynews.com/science/ci_26866639/san-benito-countys-measure-j-voters-backing-anti

Mendocino County, California – 4th November 2014 – this ban on fracking was implemented as part of a community Bill of Rights to “natural and chemical free communities and ecosystems, a clean environment, and self-government by the people, without manipulation and overwhelming influence from corporations.”

It imposes considerable penalties for breaches.

http://ballotpedia.org/Mendocino_County_Community_Bill_of_Rights_Fracking_and_Water_Use_Initiative,_Measure_S_%28November_2014%29

Santa Cruz County, California – May 2014 - <http://www.reuters.com/article/2014/05/21/california-fracking-idUSL1N00700J20140521>

Highland Park, New Jersey - Sep 17, 2013 – An ordinance to ban fracking was passed by Highland Park Borough Council.

http://www.nj.com/middlesex/index.ssf/2013/09/highland_park_becomes_first_town_in_nj_to_ban_fracking.html

Secaucus, New Jersey – 26th June, 2012 - The mayor and Town Council banned fracking and fracking waste water “in a resolution that states that the drilling process causes environmental hazards.”

http://hudsonreporter.com/view/full_story/19312259/article-Secaucus-bans-%E2%80%98fracking%E2%80%99-Local-officials-also-call-for-statewide-and-national-ban-?instance=secondary_stories_left_column

Denton, Texas, – 4th November 2014 - by citizen ballot – permanently prohibits fracking within the city limits. <http://www.dallasnews.com/news/politics/headlines/20141105-denton-fracking-ban-passed-in-landslide1.ece>

Hawaii – October 2013 - unanimous County council bill banned hydraulic fracturing. <http://hawaiitribune-herald.com/sections/news/local-news/council-oks-ban-fracking.html>

Vermont – 17th May 2012 – Vermont was the first US state to ban fracking. The Governor stated that protection of drinking water is more important than increased access to natural gas.

http://www.huffingtonpost.com/2012/05/17/vermont-fracking-ban-first_n_1522098.html

2. UK

Wales - from February 2015 – “effectively making it impossible for shale gas developments to receive planning permits in Wales.” <https://uk.finance.yahoo.com/news/wales-votes-against-shale-gas-190742367.html>

Northern Ireland – July 2014 – the environment minister promised that there will be no fracking in Northern Ireland unless it can be proved “safe beyond doubt”.

<http://www.belfasttelegraph.co.uk/business/news/fracking-drilling-will-not-be-allowed-in-northern-ireland-unless-its-proven-safe-warns-environment-minister-mark-h-durkan-30469238.html>

3. Europe

France - 30th June 2011 - Ban on hydraulic fracturing was voted in by parliament. The International Energy Agency claims that France has more plentiful reserves of shale gas than most of Europe, but France’s Constitutional council threw out a 2013 challenge to the law by US based Schuepbach Energy

<http://www.dw.de/french-court-rejects-challenge-to-anti-fracking-legislation/a-17151744>

Current President François Hollande has promised the ban will be maintained for his five-year term.

<http://www.bbc.com/news/business-23311963>

Luxembourg – 13th November 2012 – the Luxembourg parliament voted against a motion to extract underground shale gas based on environmental concerns. <http://www.wort.lu/en/luxembourg/no-fracking-of-shale-gas-in-luxembourg-50a37ff8e4b0e83edf95f923>

Bulgaria – 18th January 2012 - Bulgaria banned exploratory drilling for shale gas. On 14th June 2012 Bulgaria imposed an absolute ban on fracking and revoked Chevron’s shale gas permit.

<http://www.theguardian.com/world/2012/feb/14/bulgaria-bans-shale-gas-exploration>

Spain – 30th January, 2014 – fracking was banned in Catalonia as part of the urban planning law.

http://ccaa.elpais.com/ccaa/2014/02/01/catalunya/1391210321_238105.html

– fracking was also banned in Cantabria, followed by La Rioja and Navarra later that year.

http://sociedad.elpais.com/sociedad/2013/04/08/actualidad/1365443283_986703.html

“The Rioja Government has implemented the principles of preventive action and caution advocating the European Union (EU) on environmental protection.”

<http://www.larioja.com/20130531/local/region/gobierno-rioja-prohibe-usar-201305311150.html>

Navarra – banned hydraulic fracturing for exploration and extraction “under the provisions of the Regional Law of Urban Planning and Land Regime of Navarre.”

http://www.diariodenavarra.es/noticias/navarra/mas_navarra/2013/10/10/el_parlamento_prohibe_quot_fracking_quot_navarra_pese_upn_ppn_132959_2061.html

Canton of Fribourg, Switzerland – April 2011. Decision not to renew exploration licence of Schuepbach Energy, and all other licences suspended “for an undetermined period.”

<http://coalseamgasnews.org/news/world/switzerland-joins-worldwide-ban-on-gas-fracking/>

Austria – March 2014 - a fracking ban was enshrined in the Vorarlberg State Constitution.

<http://www.vol.at/fracking-verbot-wird-in-vorarlberger-landesverfassung-verankert/3907751>

Italy – September 2014 – a ban introduced as part of the Law of Stability 2014 in order to protect groundwater and soil and promote “efficient use of national water resources.”

<http://www.ilfattoquotidiano.it/2014/09/04/fracking-commissione-ambiente-da-vietare-il-ministero-mai-autorizzato/1110626/>

4. New Zealand

Christchurch/Aotearoa– April 2012 – A unanimous vote by Christchurch City Council to declare the city a frack free zone, citing impact on the local environment, water supply and earthquakes.

<http://archived.ccc.govt.nz/council/proceedings/2012/april/cnclcover12th/ConfirmedMinutesCouncil12April2012.pdf>

Kaikoura – April, 2012 - The Kaikoura District Council declared itself a frack-free zone.

5. Canada

Shale gas was a major issue in the New Brunswick election of September 2014. Many commentators [stated](#) that the election a referendum on shale gas extraction.

As a result of the election, the New Brunswick parliament, on 18th December, 2014 introduced Bill 9, which placed a moratorium on the process of fracking. The moratorium will not be lifted unless the following five conditions are met:

1/ The industry gains a social license to operate.

This will be sought through extensive consultation and engagement exercises with New Brunswickers in order to identify whether the industry has been able to achieve social acceptance.

2/ Clear and credible information about the industry.

This will permit the government to compile clear and credible information about the impacts of hydraulic fracturing on public health, the environment and water in order to better inform a decision to allow the industry to proceed. This will allow the province to “develop a country leading regulatory regime with sufficient enforcement capabilities”.

3/ An infrastructure Plan;

“This analysis and planning will enable us to mitigate potential impacts on our public assets and address other related issues such as the disposal of waste water.”

4/ Proper consultations with First Nations;

“This exercise would have to ensure that we are fulfilling the crown’s obligations under the duty to consult”.

5/ Maximized benefits

There would need to be clear benefits for the people of New Brunswick for the industry be allowed to proceed.

Does this moratorium make a distinction between hydraulic fracturing with propane and water?

Although there are some differences between hydraulic fracturing with propane and hydraulic fracturing with water, the moratorium applies to hydraulic fracturing by any means.”

http://www2.gnb.ca/content/gnb/en/news/news_release.2014.12.1404.html

Bill 9 can be found here - <http://www.gnb.ca/legis/bill/FILE/58/1/Bill-9-e.htm>

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.

Refer to Section 5 above.

Victorian Government Guidelines

- The Victorian State Government has planning guidelines in place to preserve prime agricultural land. Gippsland has some of the best agricultural land in Australia. Why would this be put at risk? This is a serious conflict of interest.
- In June 2014, Russell Northe, the then Victorian Minister for Energy and Resources, made a press release that “The Coalition Government will not put at risk the water aquifers, the agricultural production and the liveability that are the hallmarks of country Victoria”.
- **We hope the Labour Government will promise to preserve the integrity of aquifers and agricultural land, and say “NO” to all forms of Unconventional Onshore Gas Mining.**
- **Politicians would NOT have a mining company operating in their own backyard.**
- **City people would NOT have a mining company operating in their own backyard.**
- **Other businesses do not have to try & operate their business with an industrial gasfield in the middle of it, with no say in where mining infrastructure is placed, and quality control breaches will definitely occur.**
- **Why do farmers & country people have no voice to stop mining happening in their backyard?**

Many politicians, and some people supposedly representing farmers, argue that farmers should be allowed to have the choice of either granting, or refusing, permission for a mining company to mine for gas on their farm. However, **unlike other uses of land, when mining companies put in wells for unconventional gas mining, there will be serious effects on ALL the farms in the area, whether or not the other farmers have given their permission or not.** Contamination of the groundwater through just ONE well would have a devastating effect on the groundwater of the whole region, destroying the land for agriculture in the future. **It is NOT safe to allow even one well in a region. The government needs to protect the quality of groundwater and farming land for current and future agricultural uses. Once this quality is lost, it CANNOT be regained.**

We strongly urge you to recommend that Victoria ban all unconventional gas drilling permanently.

From: The Meerlieu & District branch of the Bairnsdale Gas Field Free Group

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