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Friends of the Earth submission to the Economic Development and Infrastructure Committee

### **Inquiry into the benefits and drivers of Greenfields Mineral Exploration and Project Development in Victoria**

August 25, 2011

Friends of the Earth (Melbourne) Inc welcomes the opportunity to provide a submission to this Inquiry.

We are a membership-based environmental organisation which has been active in Victoria for almost 40 years.

#### **Issues of concern**

The Economic Development and Infrastructure Committee is required to inquire into the benefits and drivers of Greenfields Mineral Exploration and Project Development in Victoria.

The Committee has been asked to consider a range of issues.

- a. Victoria's mineral endowment (often referred to as 'prospectivity') across a portfolio of commodities (including energy earth resources and extractives products);
- b. the regulatory environment;
- c. fees, charges and royalties;
- d. national and international perceptions of Victoria's prospectivity and regulatory environment;
- e. the success and failure of projects in Victoria's mining development pipeline;
- f. different approaches and programs applied in other Australian and international jurisdictions to foster increased investment in Greenfields exploration for, and development of, minerals and energy earth resources;
- g. the different roles of government (this may include, but is not limited to, targeted industry engagement, facilitation and generation of geological survey information);
- h. opportunities to increase the net benefits from Victoria's minerals and energy earth resources, and to potentially provide for self sufficiency in low cost energy and extractive materials, consistent with the principle of economic efficiency; and
- i. consideration of the costs and benefits of Greenfields minerals exploration (economic, social and environmental), and whether there are opportunities to improve the management of potential conflicts between exploration and other land uses.

The key issue of concern to our organisation relates to point (i), specifically the question of the possible “costs and benefits of Greenfields minerals exploration (economic, social and environmental)” whether there are opportunities to improve the management of potential conflicts between exploration and other land uses”.

We will address these issues.

As the state government will be keenly aware, there is at present a significant number of applications for Exploration Licences across the state for resources which, if successful, may lead to new, and potentially large scale, greenfield developments.

Our main concern is that new, broad acre and open cut operations will impact negatively on:

- Ground and surface water supplies and quality,
- Remnant vegetation and potentially key species of animals and plants,
- Some of the state’s most significant food producing areas,
- Rural and farming communities who may be exposed to these operations.

In addition to the concerns about direct impact in these areas through the physical activity of exploration and production, transport, noise, waste management, etc, we hold grave concerns that the government may be prepared to approve applications for new broad acre resource production which will greatly increase the state’s contribution to climate change.

We have a mainstream view on the matter of climate change, and understand that it is entirely inappropriate to be allowing new investment in fossil fuels given what climate science is clearly telling us on the need to reduce greenhouse emissions this decade.

In this sense, any development of:

- Coal seam gas,
- Shale gas
- Brown or black coal

is entirely inappropriate if we are to take a rational approach to mainstream climate science.

As has been noted by the Australian Federal Government (1) if unchecked, climate change is expected to impact on our state in various ways, including:

- sea level rise which will impact on coastal settlements, infrastructure and ecosystems,
- much of Victoria lies within the Murray Darling Basin region where climate change is likely to have serious impacts on water resources,
- in Melbourne the average long-term stream flow into water supply catchments could be reduced by up to 11 per cent by 2020, and as much as 35 per cent by 2050,
- parts of Victoria are likely to experience increased bushfire risk due to higher temperatures and drier conditions, and generally it is expected that there will be more extreme weather events and heat waves (which have obvious public health implications, for instance, more people may suffer heat-related illnesses and death),
- potential changes in climate may reduce productivity and output of Victoria’s agricultural industries in the medium to long term. ABARE has modelled the likely impacts,

- almost all natural environments in the state are expected to be negatively impacted.

So, while on a global scale, the contribution of new emissions from new fossil fuel production will be fairly minimal, there can be no doubt that they will contribute to future warming, and hence the impacts outlined above. In this sense the climate change contribution is relevant to the terms of reference of this committee, because it will add considerable “economic, social and environmental” costs for Victoria.

The state government must be keenly aware of the controversy raging around the development of CSG and new coal operations in other parts of Australia. Given that the CSG industry is not yet established here in Victoria and it has been many years since there has been a new open cut coal operation approved, we believe it would be prudent to use the precautionary principle and implement a ban on any CSG or coal development until a thorough assessment has been made into the possible social and environmental impacts of these industries. A key issue here would be to determine what implications there might be for our current food production through the incursion of mineral development into agricultural areas.

We hold specific concerns about a number of particular resources which could constitute future Greenfield mineral developments.

## **COAL BED METHANE (COAL SEAM GAS)**

### ***Ground water impacts***

A number of companies have submitted applications for exploration licences for CSG across the state.

Test wells would be drilled into the coal seam in the exploration process. These initial wells are unlikely to produce much gas until the coal seam has been stimulated by hydraulic fracturing (fracking). This is achieved by pumping a fracturing fluid into the coal seam at pressures sufficient to crack open the rock. This enables the gas to flow to the well more easily.

Based on the experience of communities in Queensland and elsewhere, companies are very reluctant to reveal what they use in the fracking process and yet continually imply they are quite safe. Fracturing fluids are primarily water but contain other chemicals, often including acids, solvents, surfactants, biocides, and hydrocarbons. Sand is often added as a propping agent to hold the fractures open and allow the gas to flow freely to the well bore. Some of this toxic fracturing fluid, known as ‘flowback water’, resurfaces but much may remain underground.

Concerns about CSG operations:

- Extracting coal seam gas (CSG) requires the removal of large volumes of generally saline “associated water” from the coal seam.
- The extraction of associated water can lower water levels in adjoining aquifers or in shallower, alluvial systems.
- In many areas, we do not fully understand the degree of connectivity between different aquifers, nor the extent to which groundwater sources are connected to surface waters. In some places groundwater provides the base-flow to creeks and rivers; in others, creeks recharge groundwater aquifers.
- Hydraulic fracturing (fracking) causes micro-seismic events or little earthquakes intended to open up pathways for fluids or gases to flow. If these fractures intercept

fissures or faults, the fracking fluids, contaminated water or gas can move into other geologic layers, contaminating the groundwater.

### ***Salt and other contaminants***

- Coal seam gas (CSG) water (also known as 'associated', 'produced' or 'formation' water) is regarded as a waste by-product. Large volumes must be removed from coal seams to allow gas to flow.
- CSG water is generally high in sodium and may contain other contaminants. In the case of Queensland, where the industry is relatively more advanced in its development, each megalitre (one million litres) of associated water generally brings up 5 - 8 tonnes of salt previously stored safely underground.
- CSG water may also contain heavy metals, carcinogens such as benzene, toluene, ethylbenzene and xylene, and radioactive chemicals that are naturally present in coal seams. Some of these highly toxic substances bio-accumulate - that is, they are concentrated as they move up the food chain.

### ***Climate impacts***

The production, burning and export of CSG for energy may be little or no better for our climate future than coal.

- Coal seam gas (CSG) is a fossil fuel - a dirty energy source that adds to greenhouse pollution.
- The gas industry claims gas-fired power stations produce 70% less CO<sub>2</sub> than existing coal-fired power stations. This figure only refers to the emissions released when the gas is burnt. It does not include the emissions involved in producing the gas - the drilling, fracking, compressing, pumping, liquefying and transporting the gas.
- Liquefying natural gas consumes at least 20% of its energy value and cancels almost 30% of its "clean" character.
- Monitoring of methane leakage in the oil and gas industry is limited, but conservative estimates suggest that during the life cycle of an average coal seam gas well, between 3.6 and 7.9% of total production is emitted to the atmosphere as methane. This is at least 30% and perhaps more than twice as great as the life cycle methane emissions for conventional (natural) gas which range from 1.7 - 6%.

CSG may be cleaner than coal, but it is neither clean nor green.

The information used above largely comes from the Lock the Gate Alliance (2).

## **BROWN AND BLACK COAL**

Victoria currently relies heavily on coal to meet our energy needs.

With what we know about climate change, we know that the world must transition rapidly to a low carbon future. This will mean that we must adopt renewable energy sources to meet our energy needs.

Victoria is blessed with a range of renewable and low emissions energy options, including wind and solar, geothermal and wave energy.

The time for further investment in coal, especially broad acre open cuts, is long over. New coal mining operations in Victoria would have a massive negative impact on

local people, local economies, landscapes and waterways. It would add huge greenhouse emissions to the atmosphere. Because coal mining is a single-use option for land where it occurs, this would threaten on-going production across a significant number of food producing regions.

A significant issue for the Committee to consider is the question of the possible food security implications for Victoria if we do opt for a major new stage of development in fossil fuel developments across the state.

### **Summary**

To conclude, we repeat our call for the government to implement a ban or moratorium on any new broadacre/ Greenfield fossil fuel developments across the state until there has been a thorough inquiry into the likely social, environmental and food security implications of this industry.

- (1) <http://www.climatechange.gov.au/climate-change/impacts/national-impacts/vic-impacts.aspx>
- (2) Full references are available on their website. <http://lockthegate.org.au/csg-facts/>