

Executive Officer,
Natural Resources Committee,
Adelaide.

Re:
Inquiry into Fracking in South Eastern Australia

To members of the committee,

This submission will raise a number of concerns in regards to mining using unconventional hydraulic fracturing.

- Industry requirements for water.
- Impacts on climate and human health.
- Long-term economic outcomes.
- Effectiveness of existing legislative Acts and Regulations

Industry requirements for water

In his article *Natural gas: Should fracking stop?* Howarth et. al. explains the process employed in unconventional fracking. 'An average of 20 million litres of water are forced under pressure into each well, combined with large volumes of sand or other materials to help keep the fissures open, and 200,000 litres of acids, biocides, scale inhibitors, friction reducers and surfactants. The fracking of a conventional well uses at most 1–2% of the volume of water used to extract shale gas.'

This is a new method of mining that has only begun in earnest in the last decade. The question of water requirements alone is cause enough to reconsider the wisdom of this endeavour. South Australia is long touted as being the driest state in the driest continent

Figure one shows estimated water requirements from commercially producing fields in NSW and Queensland over six years. I find it interesting that a state that employed permanent water conservation Measures in 2003 and level 3 Water restrictions in 2007 (ABS) is now proposing to employ one of the most water intensive extractive technologies available. South Australia's reservoirs hold almost 200,000 Megalitres (SA Water). It is quite feasible to assume that one commercial mine will require 5% of this states water storage capacity for every year of operation. It is the people of South Australia who will be affected by excessive use of a resource noted for its scarcity.

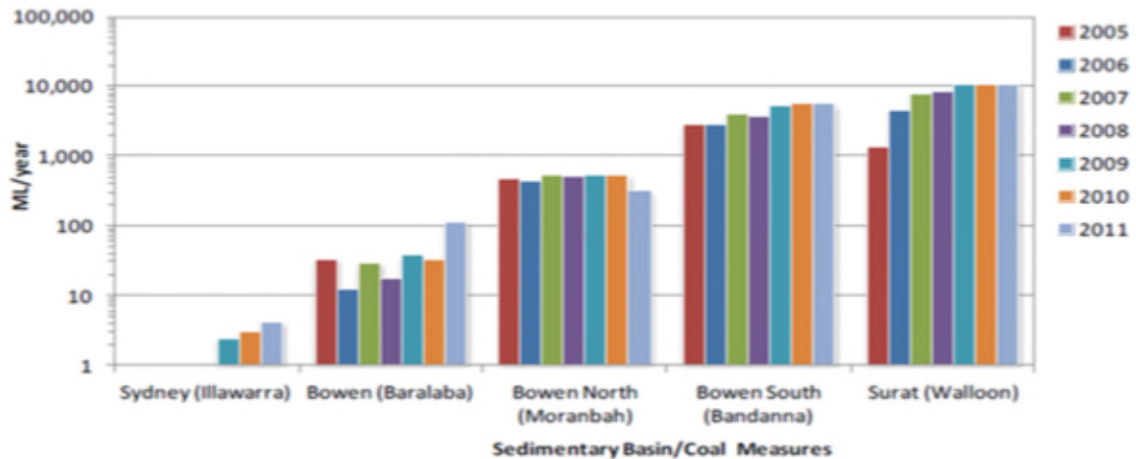


Figure 1 Estimated volume of water from Queensland and NSW commercially producing CSG fields (Sydney Catchment Authority, 2012 via Chief Scientist 2013) Note: Y-axis is a logarithmic scale

Impacts on climate and human health

Much of the water and toxic chemicals pumped and released in this process flows out of the mine and is placed in holding tanks for later disposal. Issues widely reported with this method include and are not limited to:

- Poorly treated water leaking into the water table.
- Leakage of fracking chemicals into the water table.
- Escape of methane gas during the mining process

Fracking extracts heavy metals, radioactive material and salts that pose significant risks to ecosystems and public health. (Horwath 2011)

This raises the question regarding the disposal of millions of litres of contaminated water, a cost reportedly borne by governments in more than one country due to the collapse of businesses associated with this method of extraction.

A study held in Washington County in 2013 showed that proximity to natural gas wells may be associated with the prevalence of dermal and respiratory conditions in residents from exposure to air and water contaminants. (Rabinowitz 2013). See also Bamberger and Oswald 2012 and Steinzor et. al. 2013. Rigorous research in this area is only now beginning to offer a picture of the consequences of this mining technique.

Other areas of risk towards our water and ecosystems concern pressure differentials that can potentially affect or reverse the flow of ground water from dependant ecosystems towards depressurised coal seams. There is no full map of our underground water systems and extractive mining and farming is increasing with little concerns about capacity or irreversible impacts to water systems. (Chief Scientist 2013)

Long-term economic outcomes

Winemaking in South Australia has provided strong sustainable growth and a solid return on dollars invested for generations. Most open sources estimate the life span of unconventional CSG mines at 25-30 years, with some claiming that figure as an upper limit. Research is lacking in this area, as unconventional fracking is still a very new technique. To allow major geological manipulation of subsoil structure in south Australia's premium wine making areas with a virtually unknown, water intensive, extractive technology for short term gain seems to be folly of the highest order.

Effectiveness of existing legislative Acts and Regulations

The Commonwealth Environment Protection and Biodiversity Conservation Act 1999 has been amended in 2013, requiring Federal approval for CSG developments that have a potentially significant impact on water resources. (Chief Scientist)

This Act applies monetary compensation for environmental damage that cannot be made good yet fails to apply the Precautionary Principle within its approvals.

South Australia entered the National Partnership Agreement on Coal Seam Gas and Large Coal Mining Development in 2012 that recommends the establishment of an independent Expert Scientific Committee.

The *Initial report on the Independent Review of Coal Seam Gas Activities in NSW*, recommends a greatly expanded data monitoring and collection methodology and a fully transparent sharing of data and information. The author recognises that unconventional fracking is poorly understood, requiring the complete and accurate collection of unbiased data in a transparent form.

My concern with this approach is that the mining method has left legalisation behind and there is no evidence that the political will is present to expend the resources to achieve what the report recommends. I think such resources better expended on sustainable practises capable of long term benefit not necessarily related to the development of fossil fuels, a field that is becoming increasingly fraught.

Conclusion

This short submission has touched upon some of the risks associated in using a poorly understood method of resource extraction. High water use, the possibility of irreparable damage to the water table and dependant ecologies for a process that offers what is in fact, a short-term return.

Legislation is far behind in recording or enforcing best practice methodologies and the resources needed to achieve these requirements can conceivably be utilised in a area that provides the state with long term benefits.

Regards,

Jon Gray

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