

## **Re: Submission to Inquiry into Fracking**

Dear Panel Members,

I am a mother of two children, a school teacher and a concerned member of the Geraldton community. I originally come from a farming background, having grown up on a farm in Dandaragan. I still have a strong connection to the area, with family and friends still living and farming in this region. I first heard about fracking over 10 years ago, after reading about it in agricultural newspaper. On discovering the process involved injecting a mixture of water, sand and 'chemicals' deep into our ground, I began researching the topic. As a result of this research I have huge concerns, about the process of the hydraulic fracturing for unconventional gas and the gasfields that go with it and how it will affect not only our agricultural sector, but all the communities that exist in and around the areas proposed for gasfields. The risks greatly outweigh the benefits and this is why I am opposed to fracking in Western Australia.

My submission includes the following issues:

- The health impacts of Unconventional Gas
- Contamination of Groundwater & Surface Water
- The large amount of water used in the mining process
- Impact on Agriculture
- Impact on Tourism and Biodiversity
- Impact to Air Quality and Climate Change
- The regulation of the fracking industry
- The cost to government establish the gas fracking industry vs Renewable Energy

My main concerns with fracking and unconventional gasfields include the following:

### **The Health Impacts of Unconventional Gas**

There are many documented cases of health impacts from people living in Gasfields. There are numerous interviews with people living in and around Queensland in Gasfields and in the USA shale gasfields, that have suffered health problems.

Some of the public health effects of unconventional gas development outlined in the 'Compendium of Fracking Risks compiled by the Concerned Health Professionals of New York', included increased rates of hospitalization for cardiological complaints, cancer, skin conditions, and urological problems; increase in frequency of health symptoms reported by residents as distance between households and gas wells decreased; with rashes and upper respiratory problems more prevalent among persons living less than one kilometre from drilling and fracking operations; increases in commercial vehicle accidents; a sharp rise in ambulance calls and emergency room visits for drug related cases and oilfield related injuries and accidents; increase in infant deaths to six times the normal rate over three years; congenital heart defects, and possibly neural tube defects in newborns, associated with the density and proximity of natural gas wells within a 10-mile radius of mothers' residences; elevated rates of low birthweight among infants born to mothers living near drilling and fracking operations during their pregnancies; reductions in average birthweight and length of pregnancy as well as increased risk for low birthweight and premature birth associated with proximity to fracking operations.

Reference: Concerned Health Professionals of New York & Physicians for Social Responsibility Compendium of scientific, medical, and media findings demonstrating risks and harms of fracking (unconventional gas and oil extraction) ( 2016, 2015)

A scientific report “Impacts of Gas Drilling on Human and Animal Health” outlines the impact of gas drilling on human and animal health. It states that contaminated waste water has had serious implications on a range of animals. Some of these health impacts include reproduction, neurological, respiratory, urological, gastrointestinal, dermatological issues and in numerous cases ‘sudden death’. (Reference: Impacts of Gas Drilling on Human and Animal Health, New Solutions Vol.22(1) 51-77, 2012)

<http://journals.sagepub.com/doi/abs/10.2190/NS.22.1.e?journalCode=newa>

Some of the chemicals used in this process are toxic and can have detrimental health impacts of humans and animals. In the Department of Mines and Petroleum “Western Australia’s Petroleum and Geothermal Explorer’s Guide” p.23 they state “the increased use of RELATIVELY safe chemicals” are used. “Relatively safe” does mean these chemicals are safe. If these chemicals were safe, they would clearly state so. There has also been no scientific research carried out on the effect of mixing these chemicals together and the cumulative effect that the cocktail will have on humans and animals.

<http://www.dmp.wa.gov.au/Petroleum/Publications-1601.aspx>

### **Contamination of Groundwater & Surface Water**

This is probably the most worrying aspect of fracking, the fact that it can potentially contaminate our precious groundwater. For people living North of Perth this is of huge concern, as many farmers, communities and towns rely solely on groundwater.

There are huge amounts of evidence, to clearly link fracking and water contamination. As a teacher, I am required to teach students about water conservation and threats to our water supply. The Western Australian government body, The Water Corporation, produced an education packages for school teachers, that clearly outline threats to our groundwater. In their document it states that “The threat of groundwater pollution is greater than that of running out of a groundwater supply. Groundwater protection through good management of the resource is essential” (Reference: What is groundwater?, Water Corporation p.1 ) To allow such invasive, risky mining in Western Australia demonstrates ‘poor’ management of resources.

According to an Australian Federal Government document, written in 2012, “Groundwater Essential” by the National Water Commission (Groundwater Essentials, Australian Government, National Water Commission, p.28) refers to ‘Threats to groundwater quality and Inter-aquifer contamination’ and states that ‘Hydraulic fracturing may connect aquifers of varying water quality’. It goes on to explain how contamination can be ‘minimised’, however minimised does not mean prevent or stop. There is no guarantee that carrying out these suggestions will prevent contamination. Furthermore on pp. 29 & 30 it lists “oil and gas extraction” as an activity that makes groundwater vulnerable to contamination.

[http://www.groundwater.com.au/media/W1siZiIsIjIwMTIvMTAvMTYvMjBfNThfNTZfNTdfR3JvdW5kd2F0ZXJfZXNzZW50aWFscy5wZGYiXV0/Groundwater\\_essentials.pdf](http://www.groundwater.com.au/media/W1siZiIsIjIwMTIvMTAvMTYvMjBfNThfNTZfNTdfR3JvdW5kd2F0ZXJfZXNzZW50aWFscy5wZGYiXV0/Groundwater_essentials.pdf)

There has been recorded events around the world of well integrity and wells failing. Even with the best regulations in the world, accidents can still occur. A detailed study in Pennsylvania found that more than 6% of gas wells leaked in the first year of operation and up to 75 per cent of existing wells could have some form of integrity failure. If an aquifer is contaminated by dangerous chemicals, how can a mining company ‘make good’ a poisoned aquifer? According to the Water Corporation their policy to groundwater pollution is “Prevention is better than cure”. If this is the case, a highly invasive, high risk mining activity should not even be considered. The other issue is that groundwater

pollution has a long memory, which refers to the fact it can take a decade to hundreds of years for the pollution to disperse naturally.

The idea of hydraulic fracking, waste water being recycled has been proposed by industry too and will involve many risks. Not only are many of the chemicals used in the process highly toxic, but the fracturing process can actually release and bring to surface naturally occurring, highly, toxic compounds from the shale. These are compounds that should be left there and not be disturbed.

### **The large amount of water used in the mining process.**

It is common knowledge that in Australia and in particular WA we have major water shortages. The over allocation and overuse of groundwater is certainly a massive concern in relation to unconventional gas production. The National Water Commission (Groundwater Essentials, Australian Government, National Water Commission, p.27) it clearly states that “Over extraction can cause groundwater salinisation, resource depletion and saltwater intrusion, and can disturb the balanced interaction between surface water and groundwater”. The document states that “poor management practice has been exacerbated by: groundwater being provided free or under price”, which is the case with Petroleum and Gas mining companies.

With declining rainfall in WA, Water shortages are already such a problem in our state, that the government has a ‘Water Wise Program’ promoting the importance of saving water by the everyday person (sprinkler bans, rain water tanks etc), yet Petroleum and Gas mining are allowed to have unlimited use of large amounts of our precious groundwater. This is not only an environmental issue, but a social justice issue. This is every Western Australian’s water, not mining companies. How will the government rectify landholders bores running dry, if the fracking process depletes groundwater supplies.

Water Corporation teaching documents, state “If groundwater is not managed in a sustainable way, the existence of many towns and businesses in rural Western Australia will be threatened. A sustainable groundwater system is one in which no more is used than is replenished. This is the key to the maintenance and protection of our groundwater resource” (Reference: Water Sources in Western Australian Country Towns, Water Corporation, p 1). The amount of water used in this mining process will definitely outweigh the amount that is recharged into an aquifer. On this information alone, hydraulic fracturing should not be allowed.

Many Western Australian towns, especially those North of Perth rely on groundwater as the 100 percent water source (Reference: “Water Sources in Western Australian Country Towns”, Water Corporation). This is also the case for many farmers and their livelihoods depend on it. It has been documented on an ABC 4 Corners episode, where landholder’s bores are being reduced greatly because of how much water the gas industry has consumed by fracking. In some towns in America, bores are completely dry now because of the fracking process.

The Water Corporation’s educational program “Water, More Precious than Gold”, plainly states as its objectives as “The student should: Appreciate how precious water is in our lives and why we need to conserve it; Investigate ways that we can save water at school, at home and in the community”. It is interesting that it doesn’t mention big business here. It seems rather hypocritical that the government insists on teaching the next generation about water conservation, while promoting industries which directly conflict such objectives and put our water supply at risk.

## Impact on Agriculture

Contamination of important and vital agricultural land is of huge concern to landholders, communities and the general public. Where fracking has occurred around the world and in Australia, there is strong evidence to show that there has been contamination of surface water (not to mention groundwater) and therefore of actual land. If this land is agricultural, then it will impact the landholder by affecting their stock and cropping regime. This in turn will affect every Western Australian, as this is where their food comes from.

Decrease in land value is an extremely common occurrence in areas where fracking has occurred. Many farmers are even on the record saying that they cannot sell their properties, since the unconventional gas mining has taken place. This is another costly blow that landholders and farmers have to bear the burden of, made even worse when they did not want the gas development on/near their land. Rabobank, the world's leading specialist in food and agribusiness banking, stated risks from unconventional gas mining included reductions in farm productivity, efficiency, land values and credit availability. It also indicated that concurrent CSG mining and agricultural activities on agricultural land could result in problem loans or defaults.

<http://www.psr.org/assets/pdfs/fracking-compendium-5-water-excerpt.pdf>

Another issue for landholders is of insurance. Some graziers have reported that insurers have examined the risk of unconventional gas contamination and found it too high to offer insurance. If this is the case for an insurance company, then a landholder should be able to say no to the gas companies.

Meat and Livestock Australia has advised there is a genuine risk that landholders may ultimately be responsible for liabilities arising from unconventional gas activities if they lead to personal injury, property damage, or contamination.

Reference: Meat and Livestock Australia. (2014) Coal Seam Gas Operations on Livestock Property: General Information for Livestock Producers.

Damage to land by mining machinery. Already landholders in the Dandaragan & Badgingarra area, have been unsatisfied with the condition their roads were left in after the seismic surveying was carried out. The equipment used made a complete mess on public roads and internal farm roads. This cost to repair will once again lie with the landholder and the local shires and main roads department.

Another issue for landholders located in and around a gasfield is monitoring of land, air and water quality.

Landholders are concerned if comprehensive baseline data be conducted in all areas before fracking occurs, so that landholders can monitor and detect if contamination has occurred? Also who will be liable for contamination?

The Petroleum and Gas mining companies have an unfair advantage over landholders, traditional owners and communities. Landholders do not have the right to refuse access to these companies in WA and many gas companies have been known to carry out bullying and standover tactics with landholders. I know of farmers that experienced, what they called "harassment" from the gas company, with relentless phone calls and threats being made to force landholders to sign agreements. Gas companies also have the advantage of being able to employ lobbyists and lawyers, who are highly trained at gaining agreements with landholders. Where as many farmers, have never had any experience in this area before and may not have the skills required to be able to negotiate such an agreement. This is not a level playing field for landholders and traditional owners.

The agricultural sector is vital to Western Australia's economy and is a long term industry required for food production for it's citizens. To prioritise the short term, fossil fuel industry over the agricultural sector by allowing unconventional gas developments, on prime agricultural land, is a great risk. As a state, Western Australia can survive without the unconventional gas industry, as there are many sustainable, renewable, alternative energy sources available. Clean water and healthy land is a necessity and something that the government should endeavour to protect at all costs.

## **Impact of Tourism and Biodiversity**

Fracking and the development of gasfields will impact have on areas of 'High Biodiversity' such as the Kwongan Healthlands. The Kwongan vegetation is rated as one of the 20 biodiversity hotspots in the world, with over 2000 plant species occurring in the West Midlands region alone. This sort of industrial activity should not be allowed to occur on one of Western Australia's most biodiverse and ecologically significant areas. There is only a very small fraction of Kwongan heath remaining and this must be protected. There has been a number of projects 'Kwongan Connections: Valuing the Biodiversity of the West Midlands' and 'Back from the Brink', funded by government to raise awareness of this important biologically diverse areas. These areas are a great tourism drawcard for Western Australia, with the very popular attraction of unique flora and fauna. Tourism is a long term sustainable industry, which brings great economic and social benefits to our communities and will far exceed the life of the gas industry.

Fracking can impact these pristine areas through land clearing, introduction and spread of dieback, spread of weeds, fragmentation of ecosystems, ingress of feral predators, visual impact, direct loss of listed and or endangered species and impacts on unique caves systems.

Gas companies, such as AWE have already been allowed to clear pristine bushland in Nature Reserves, even when the land is considered so special that it is covered by international treaties (Migratory bird bilateral agreements and conventions). An example of this is Woodada Deep, located in the Lake Logue Nature Reserve near Eneabba. Stated by the Department of Conservation and Environment in a 2008 report, "The Lake Logue-Indoon system is an important feeding and refuge area for waterbirds. Australia is committed to a number of bilateral agreements, initiatives and conventions for the conservation of migratory birds which may be relevant to Lake Logue." (Reference: Dept of Conservation and Environment, Resource Condition Report for a Significant Western Australian Wetland – Lake Logue, 2008) . Gas fracking has very significant and permanent impacts on the environment and nature. The purpose of a nature reserve is to protect the environment and nature.

## **Impact to Air Quality and Climate Change**

With the entire process of fracking it involves deliberate and fugitive emissions of methane, which contributes to climate change. As climate change is widely considered the major global health threat of this century, fugitive emissions produced from the gas industry are an unacceptable health risk.

## **The regulation of the fracking industry**

There is a direct conflict of interest having the Department of Mining and Petroleum be in charge of monitoring and regulating the industry. This is the same department that is promoting the industry. The regulation of the industry should be done by an independent body.

Some of the other questions that need to be raised, when it comes to regulation of the industry and the chemicals that are used include: Who is going to regulate that all rules are adhered to? How often will wells be checked? How do you monitor the condition of a 3-4km long well that is underground? Will baseline data of all aquifers, surface water, soil and air be taken before drilling commences so that there are markers to compare data to? Will this be an independent body? Will this body be funded adequately? How is compensation determined? Are the fines for contamination a big enough deterrent for big gas companies?

Another issue of regulation is that of 'liability'. If contamination of water, land or air occurs on a property, who is liable? The gas company? The government? Or the Landholder? The Rural Industries Research and Development Corporation cite a case study in Queensland where a landowner was advised by their supply chain partners, that they would be liable for any contamination caused by coal seam gas activities. Neither the CSG company nor the insurer would agree to indemnify the landholder against that risk.

Reference: Clarke, M. (2013) Principles for Negotiating Appropriate Co-existence Arrangements for Agricultural Landholders, Rural Industries Research and Development Corporation <https://rirdc.infoservices.com.au/items/12-114>

Legal advice indicated that gas companies are refusing to include provisions in access agreements to accept liability for any contamination that may occur and that gas companies in Australia do not have to provide a 'bond'. A bond should be mandatory in all forms of mining, including the petroleum and gas industry.

### **The cost to government to establish the gas industry vs Renewable Energy**

If unconventional gas industry goes ahead in WA, the government will outlay financial resources in assisting with the establishment of gas pipelines etc. This money would be more effectively directed into the development of sustainable renewable energy sources. Western Australian's do not want to be left with stranded assets paid for by government.

I urge the inquiry to make a recommendation to permanently ban fracking of all unconventional gas mining, in Western Australia, like the decision made in Victoria. I encourage the inquiry to make recommendations, for our government to focus investments in sustainable industries, like renewable energy, where the risks are much lower and the people of Western Australia will have a positive sustainable and healthy future.

Thank you for your time.

Yours sincerely

Lisa Smith