



14 March, 2018

Enquiry Panel
Independent Scientific Panel Enquiry
Locked Bag 33
Cloisters Square
PERTH WA 6850

Dear Enquiry Panel,

**RE: INDEPENDENT SCIENTIFIC PANEL ENQUIRY INTO HYDRAULIC FRACTURE
STIMULATION IN WESTERN AUSTRALIA 2017**

Cape Conservation Group (CCG) is the local volunteer environment group, based in Exmouth, Western Australia. We are proud to have been advocating for the North West Cape (NWC) for more than 20 years. We know that we live in one of the most precious places in the world. Ningaloo, the Cape Range and the whole North West Cape are a national and global treasure.

The Ningaloo World Heritage Area is listed for its international assets: its exceptional geological formations, aesthetic beauty, the Cape Range Karst system and stygofauna, and fauna of universal significance (EPA, 1999; IUCN, 2011). The subterranean waterways associated with the karst system are highly sensitive natural ecological systems. There are ongoing concerns about the potential to cause irreversible damage to this environment.



In 2012 the North West Cape was identified as a site for hydraulic fracking by Empire Oil and Gas (Empire Oil and Gas NL, 2011), including the Merlinleigh sub-basin which was identified as a potential site for shale gas (DMP, 2015). In 2016-17, CCG and the Coral Bay Conservation Group (CBCG) surveyed the towns of Exmouth and Coral Bay (Appendix 1) asking the question “Do you want to keep this area free from unconventional gas mining?” In Exmouth CCG doorknocked more than 1000 homes, providing residents with scientific information, films and discussion about fracking over a twelve month period. Only full time residents and ratepayers over 18 years of age were surveyed. At the time there were 1800 registered adults in town and we obtained more than 985 responses. Of these **98.3%** made it clear that fracking was not socially or environmentally acceptable in Exmouth. The CBCG surveyed Coral Bay’s 151 adult residents and **99.6%** said they are against fracking. These results are emphatic – **the residents and ratepayers of the NWC do not want unconventional gas mining** to occur in this region. These people do not want the special values of the Cape be threatened or compromised. And certainly not by industries that put World Heritage values at risk.

Unconventional onshore gas mining has a sorry record in Australia and a worse record overseas. It has shown that it takes much more than it contributes, wasting precious water and polluting drinking water. Its track record has shown that communities with unconventional gas mining activities don’t thrive, it undermines economic and social health and wellbeing, ruining them. And, as we’ve seen from experiences in Queensland and NSW, and many, many experiences in the US, it decimates and industrializes landscapes.

Many towns around Western Australia that have said they are strongly opposed unconventional gas mining, and we stand with them to voice our concerns about the known and potential environmental impacts of hydraulic fracturing.

Serious Potential Threats Posed by Unconventional Gas Mining

Water: Western Australia is one of the driest places on earth and climate change is already leading to decreased rainfall in southern WA. Our land and environment are under growing pressure from a lack of fresh water. We cannot afford to put our precious groundwater at risk for a short term and unnecessary fracking industry. 75% of peer-reviewed studies suggest it impacts water quality. The risks of **groundwater contamination** in our State, if unconventional gas mining were permitted, are very high.

1. Of particular concern are stray gas contamination, contamination via surface spills, accumulation of toxins near disposal sites, and over-extraction of water (Vengosh, 2014).
 - 1.1. **Slickwater**, high volume fracking from long lateral lines is a higher risk to the environment and human health because it requires a much higher well density, many wells per square kilometer. It also requires much more industrial development over large areas, heavy equipment operating 24 hours/day, 7 days per week, 365 days per year. A higher volume of fracking fluid, millions of liters per well is required and **contains hazardous materials** including frack fluid chemicals, heavy metals, naturally occurring radioactive materials and volatile organic compounds. As the number of wells increase, the **probability of accidental releases of hazardous materials** into the air and groundwater increases. The cumulative effects on air and water from these and from **purposeful emissions** into the atmosphere and releases into the groundwater are unknown.
 - 1.2. **Groundwater contamination.** A study of Pennsylvania's Marcellus shale showed that within the first 5 years of having been drilled compared with the leak rate in the non-shale gas wells, that shale gas wells were showing a leaking rate of around 1/100 compared to 6/100 in shale gas wells. And there was a **failure rate in the wells** that was almost 10% in shale gas wells within the first 5 years. Well bore integrity and surface spills – surface fills, transportation of chemicals, transportation of waste and the impacts on the landscape is an issue here. The high failure rate means there is a **high risk of groundwater contamination**.
 - 1.3. Over 50% of 15,000 production **wells had failed** after 20 years in the Gulf of Mexico (Vengosh, 2014). North West Cape is an area with known vertical fault lines (Allen, 1993) and these increase vulnerability from accidental migration (Mauter *et al.* 2014) due to **cement failure** (Vengosh, 2014). This increases the risk of contamination.
 - 1.4. Cape Range Peninsula consists of a Karst system, ancient eroded limestone caves and waterways. Much of karst marine life exists in the zone where seawater and freshwater meet, known as the anchialine zone (DEWHA, 2010; EPA, 1999). The thin freshwater lens, 1-10m, that sits atop of saline water is narrow and vulnerable to over-extraction (EPA, 1999). The subterranean waters are connected to the ocean on both sides of the Peninsula (EPA, 1999; DEWHA, 2010) and this allows inundation with seawater during tidal events, and the surface anchialine zone is replenished by surface runoff. Water extraction on the NWC has been strictly monitored and regulated (EPA, 1997) limiting increases in water use due to limited available resources. There are also conditions of extraction and recommendations against use of desalination on Cape

Range Peninsula (EPA, 1999). Changes in water levels or salinity levels is likely to impact the health of this system (EPA, 2012). The risk of overextraction or contamination is a serious concern.

Stygofauna live in a range of underground water environments (EPA, 2012). Cape Range stygofauna are globally significant as some are completely isolated from their nearest relatives. For example, Mexico and the Caribbean, making them living evidence of the supercontinent Gondwanaland (EPA, 2012; DEWHA, 2010). Stygofauna, and some specific communities, are protected under both **Western Australian Wildlife Conservation Act (1950)** and **Commonwealth Environment Protection and Biodiversity Conservation Act (1999)**.

Because the Cape Range karst system and its marine life are so critically linked to the ocean, the following factors must be taken into consideration:

- land use
- water chemistry: dissolved oxygen, ionic balances, pH, temperature.
- presence of specific minerals: calcium (EPA, 2012)
- Karst is extremely porous, enabling rapid movement of liquids at the surface into vulnerable habitat.
- Subterranean waterways from Cape Range into the coastal plain and beyond into the marine environment are intrinsically linked.

The Precautionary Principle must be at the forefront of any decision about activities that may affect the health of the Cape Range Karst System or any other environment considered for unconventional gas mining (EPA, 1999).

2. **Harmful to health.** Unconventional gas mining and fracking is harmful to health. Communities living near gasfields in Queensland and the USA have reported **serious health effects** following the commencement of unconventional gas operations. These conditions include respiratory ailments, nose throat and eye irritations and neurological illnesses. 87% of peer reviewed papers say the health impacts are bad. There are **no papers that state there are valuable health outcomes** from unconventional gas mining.
 - 2.1. Research into the **economic and social impacts** of the unconventional gas industry in Queensland has shown that the industry has led to a **reduction in community wellbeing and social cohesion**. It also caused deterioration in local skills and infrastructure; few additional local job opportunities; and limited economic benefit to the wider economy.

- 2.2. **Economic consequences.** Unconventional gas fields in Queensland have seen a reduction in farm productivity, efficiency, land values and credit availability to landholders.
- 2.3. **Human rights are ignored.** Landholders and Traditional Owners don't have the right to refuse access to oil and gas companies in WA. This creates stress and leaves individuals and communities worried about their financial security and their ability to farm their land. The cards are stacked unfairly in favour of the gas industry and **human rights are being ignored** for a resource that is no longer strategically vital as it can be replaced by renewable forms of energy generation.
3. **Air Quality.** 92% of studies have found that there is a **negative or bad impact** on air quality. Dust contaminants in the air and surface spills impact the air quality.
4. **Climate change.** Unconventional gas mining leads to large, deliberate and **fugitive emissions of methane**. At a time when the reduction in carbon emissions is so crucial, it is unthinkable that the Government would consider permitting an industry that has such high emissions.


Conclusion

Within this submission Cape Conservation Group has provided peer-reviewed support for the impacts from unconventional gas mining on the environment, communities and individual wellbeing and health. The surveys conducted in 2016-17 demonstrate there is no community support for such industrial activity, particularly because it threatens the livelihood of the community and future generations. The Enquiry into the implications for Western Australia for Hydraulic Fracturing for Unconventional Gas (2013) has also shown conclusively, that unconventional gas mining does not enhance social, mental or economic status of the communities it is imposed upon.

For this reason we stand shoulder to shoulder with many other towns in Western Australia that also say unconventional gas mining should be banned.

Cape Conservation Group urge the enquiry to make a recommendation to **permanently ban fracking and all unconventional gas mining in Western Australia.**

Sincerely,



Denise Fitch
Chairperson

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APPENDIX 1

Exmouth – Survey Results

FRACK FREE NINGALOO

1 June 2016 – 9 June 2017

Data

Participants: 18 years +

Residents: Ratepayer, renting, living/working

Number of Streets surveyed: 94

Response

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	991	98.3	98.3	98.3
	No	4	.4	.4	98.7
	Not Sure	13	1.3	1.3	100.0
	Total	1008	100.0	100.0	

