

Fracking Inquiry Submission – Victor Hoile

Over the past 40 years I have lived, owned and operated a water boring contracting business in the Kimberley providing fresh water to aboriginal communities, pastoral stations, mining companies and oil and gas explorers alike. Over this period I have personally drilled in excess of 4000 water bores encountering a vast array of aquifers from shallow to deep, potable to saline. Finding and providing freshwater from these aquifers is how I have earned my livelihood and something I am all too familiar with. I obviously have a vested interest in water quality being maintained in Western Australian aquifers and as a result I have watched and listened with interest as the debate into the environmental impact of hydraulic fracturing has gone on. I will state up front that I completely support the process of hydraulic fracturing and have no concerns with the practice presenting a major threat to aquifer contamination. I also have complete faith in the regulator DMIRS upholding the standards required to ensure hydraulic fracturing is carried out safely and effectively. As part of my submission I have weighed in on the main categories that I have heard discussed in the debate with a particular focus on the Kimberley region.

Well Construction

I have a better understanding of the process and well integrity safeguards to prevent aquifer contamination than most as the fundamentals of borehole construction for a shale gas or an oil well are not too dissimilar to that of a water bore. As I understand the key regulatory requirements imposed by DMIRS to regulate wellbore integrity of a shale gas well are:

- Verified cement around casing
- Pressure tested steel casing¹

Also considering the well construction of holes to depths of >2000m where shale gas usually lies will require typically 3 strings of steel and cement casing to reach these depths, there are effectively 6 barriers protecting aquifers which sit below <600m depths as shown in figure 1. In all my years experience I am yet to install a pump or bore that produces potable water from an aquifer deeper than this.

One of the arguments against the well construction philosophy is that these steel and cement barriers are prone to “failure”. Indeed the statistic I often see quoted is that of the Anthony Ingraffea paper that 6-7% of wells fail within the first 3 years of construction (Ingraffea,

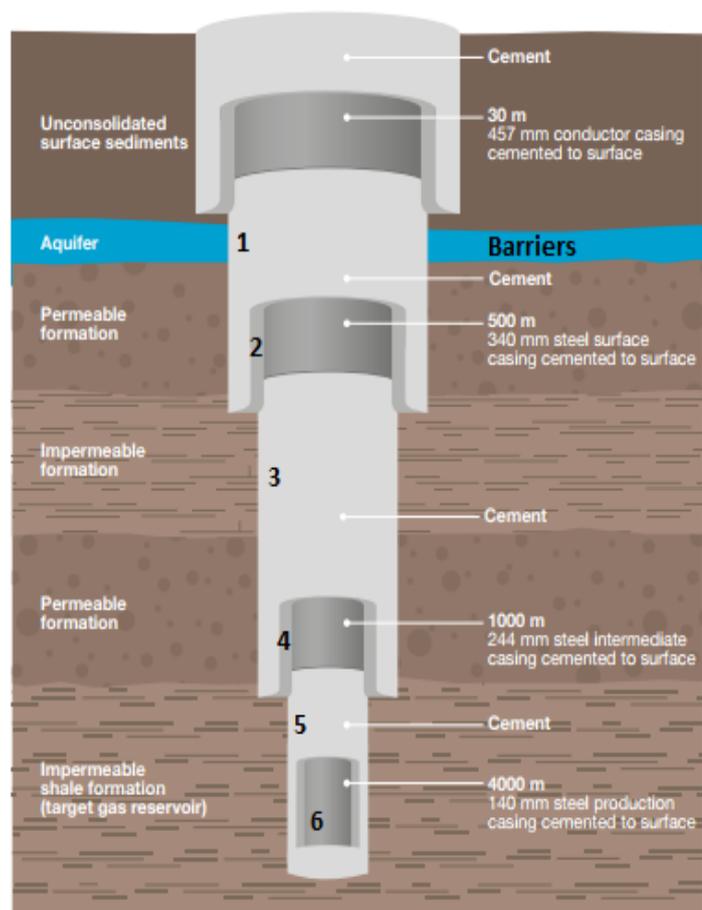


Figure 1 Typical Well Construction

2012)². I notice a “failure” in the paper was defined as a leak in the production casing. In other words a leak from inner most steel production string. Now assuming each cement/steel barrier in the well has the same probability of failure (which is not the case as the outer strings are exposed to progressively lower formation pressures – less likely), what is the probability of this leak making its way into potable groundwater aquifers protected by 6 barriers? This is a simple probability calculation = $0.06^6 = 0.00000004665$ or 1 in 21,433,470 wells could expect to have a leak to the aquifer by way of well integrity failure. What would this leak be exactly? A large percentage of water and chemicals used in fracking are flowed back in the first 6 months, so the likelihood is that this what take the form of methane gas. Methane gas is non-toxic and I’m not aware of any studies that demonstrate methane content in water to create short or long term acute health effects. Whilst I am not advocating a disregard to the threat of gas migration into aquifers, I think the consequence and likelihood of this occurring would rank extremely low with the current regulations in place.

Chemicals

As I have seen far too often in the Kimberley environmentalist have hijacked the debate with sensationalist arguments that more often than not have no scientific backing or common sense associated. Groundwater and chemicals being discussed in the same sentence is an easy scare tactic to generate fear no matter how you spin it. I can only imagine the shock and horror the wider public would experience if environmentalist were to sensationalise the fact that chemicals are used and come into direct contact with aquifers when water bores are drilled! If we didn’t use chemicals to drill water bores we would have no way to lift cuttings or weight up drill mud to provide adequate well control. Some of these chemicals are no different to those commonly used in hydraulic fracturing

- Polymer Gels – provide viscosity to lift cuttings
- Friction Reducers or foam to lubricate drill bit
- Soda Ash – to control water PH

I often hear environmentalist point out that fracking chemicals contain, carcinogens, neurotoxins, endocrine disruptors, reproductive toxins. I challenge anyone to show me any industry where hazardous chemicals or constituents of hazardous chemicals are not used in some way, shape or form. I would like to see the statistics of the amount of chemicals that travel through Fremantle harbour each day and I am sure if certain groups got their hands on these they may break into cardiac arrest. The reason why we as a society are comfortable with this? Like any industry there is an appropriate level of regulatory oversight to ensure there are checks and balances are in place to manage identified risks. This is no ground-breaking concept however it seems the lack of understanding and misinformed opinions that are being voiced in the hydraulic fracturing debate keep misconstruing the actual likelihood and consequences of risks associated with this practice. The end outcome is another taxpayer funded inquiry that will result in the exact same conclusion as those before it. Spoiler alert to whichever member of the panel is reading this submission your conclusion will be “Hydraulic fracturing can be safely managed with the appropriate level of regulatory controls in place”. I ask that you don’t make the same mistake of previous inquiries and impose unnecessary and industry crippling recommendations for the sake of justifying the resources spent on the inquiry.

² Anthony Ingraffea, 2012, *Fluid Migration Mechanisms Due to Faulty Well Design and/or Construction: an Overview and Recent Experiences in the Pennsylvania and Marcellus Play*

Another argument I have heard is that the ponds constructed for fracking during monsoonal floods are likely to overflow, contaminating surrounding areas with frac water. Unfortunately for the activists the full force of mother nature has decided to put this scare tactic to the test. The Kimberley region has just recently experienced its greatest ever rainfall on record. Two years of annual rainfall in 2 months or some 1500mm³. Did the frac ponds constructed by Buru Energy overflow. No. Why? Because they were engineered to handle such an anomalous event.

Regional Development

In the past decade the Kimberley region has had several major developments that have been shelved, taken elsewhere or stalled largely due to concerted efforts from environmentalists.

- James Prices point LNG hub (45 billion dollar project)
- Inpex Gas plant (30 billion dollar project)
- Shale gas extraction (Potential 10 billion+ dollar project)

As a result economic activity in the region has suffered enormously, compounded by the fact the region has the highest cost of living in the state⁴, double the state unemployment rate⁵ and one of the highest suicide rates in the world⁶. Projects like those mentioned above can provide long term employment for community members in the region and go a long way to improving the social and economic issues facing the region. Lasting Indigenous employment programs will stem from native title agreements negotiated from such projects, which has proven to be a resounding success for similar scale mining based projects in the Pilbara.

In my 40 years living in Kimberley it has never been more apparent that tourism and industry need to coexist. For 6 months of the year the population and visitor rates swell in places like Broome and surrounds and then declines rapidly during the wet season. During the quiet period residents are often faced with financial pressures associated with the employment and economic activity drop off. Permeant employment and flow on economic activity associated with industry like hydraulic fracturing will provide stability and less reliance on tourism.

Water Usage

I have drilled across much of the North of Australia and the fact that this is a talking point in the debate really does astound me.

The 2 well frac program executed by Buru in 2015 used a total of 21ML. The Fitzroy river during major flood as observed over the past 2 months discharges approximately 30ML/sec into the ocean. So the Buru frac program used ~2/3rds of a second freshwater discharge into the ocean.

Buru Energy was licenced to take up to 50 megalitres at each well site per annum for its proposed 2014 hydraulic fracturing program, with the company estimating a maximum 31 megalitres would be used which represents less than 0.005% of the annual sustainable yield of the Canning Basin and is less than two days water use for the town of Broome.

³ <https://www.theaustralian.com.au/news/nation/broome-sets-rainfall-record-with-1500mm-in-less-than-two-months/news-story/e2b12d8f880d34f858998352bc199154>

⁴ <http://kdc.wa.gov.au/economic-activity/cost-of-living/>

⁵ <http://kdc.wa.gov.au/economic-activity/employment/>

⁶ https://www.huffingtonpost.com.au/2016/06/27/kimberley-suicide-rate-among-the-highest-in-the-world_a_21419430/

There is enough water for industry to use without effecting or restricting drinking water supplies.

Regards,

Victor Hoile