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18 March 2018

Independent Scientific Panel Inquiry into Hydraulic Fracture Stimulation (HFS) in Western Australia 2017

Re: **Submission to the Scientific Panel**

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Dear Panel,

I wish to make the following submission to the Inquiry.

### Background

My company, an environmental consulting company of 20 years standing and specifically dealing with contaminated land, has since 2012 been actively involved in the monitoring of the environmental effects of HFS within the North Perth Basin of Western Australia.

I also have, I think, quite a unique (given my occupation now) insight into the HFS debate. For many years I was involved in the oil and gas exploration business. My involvement was on the drilling side, so I have a very thorough understanding of how oil and gas wells are drilled and constructed, and the hazards associated with the drilling of oil and gas wells.

My company's environmental monitoring of HFS sites has taken the form of:

- Monitoring of potential fugitive air emissions during HFS operations.
- Pre and post monitoring of soil chemical conditions within the footprint of on-ground HFS operations.
- Pre and post monitoring of groundwater chemical conditions within the superficial aquifer at the locations of the HFS operations.

As such I regard our submission as coming from an actual scientific approach rather than an emotional (and perhaps a less informed) one.

### Forum Attendance

I attended one of the Perth public forum meetings and was seated on a table with four 'anti-frackers'. I was disappointed that none of the participants were willing to hear what I had to say from my experience in oil and gas drilling and subsequent environmental and scientific background. The theme that ran through their 'dissertations' was all information downloaded from the internet. Not one of the participants could quote any information regarding a Western Australian context. All of their 'information' (and I use that word advisedly) was to do with the United States of America (USA) or New South Wales and / or Queensland experiences (for coal seam gas).

As I tried to point out to my fellow participants at the table, our geotechnical situation here in Western Australia is entirely different to that of the US or Australia's eastern states. As you, the panel, would be aware our oil and gas reserves are located at far greater depths than those of the US (generally) or the eastern states coal seam gas reserves. I do not think that I need to discuss the geotechnical situation here as you would (or should) be well aware of the stark differences.

In addition I do not intend to provide details as to HFS well construction, well integrity testing etc. as I am sure you will have been supplied those details or will have informed yourselves of them.

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As far as I am aware, there have been no major well failures during recent HFS operations. HFS operations are not new, although there has been a major focus on HFS of late, they have been conducted in Western Australia since the mid to late 1960's.

### Observation of HFS Controls

What I would like to put forward to the panel is the following:

1. From what my company has observed the regulatory framework that we have here in WA, via the Department of Mines Industry Regulation and Safety (DMIRS) and the Department of Water and Environmental Regulation (DWER) is extremely thorough, and more importantly, the Departments follow through with rigorous oversight of HFS operations.
2. The environmental values that we (both as a company and for myself personally) are looking to protect from adverse effects of HFS operations are accessible and useable groundwater resources; fugitive emissions of greenhouse gases such as methane; contamination of soil both at the HFS drill site and access roads; and the introduction and spread of fungal disease such as Phytophthora (dieback). From what we have observed the protections put in place by the Regulatory Departments (DMIRS and DWER) and the conduct of our client company are sufficient to mitigate the risk that these resources would be put at adverse risk pre- and post HFS operations. Our client company has adhered to not just the 'letter of the law' but has also been proactive in conducting the pre- and post HFS operations environmental monitoring and in requesting our input as to how best they go about fulfilling their obligations. They have:
  - constructed HDPE lined (triple layered) evaporation ponds to contain flow back fluids and disposed of any sludge following evaporation of the flow back fluids to appropriately classed waste management facilities;
  - constructed HDPE lined bunded areas to contain the frack materials whilst conducting HFS operations;
  - had personnel handling the frack materials wear appropriate personal protective equipment such as P2 masks, gloves, long trousers, long sleeved shirts etc.;
  - installed groundwater monitoring wells into the superficial aquifer at and in the vicinity of the HFS sites, which have been sampled on a regular basis to monitor groundwater quality;
  - undertaken passive fugitive air emissions testing during HFS operations;
  - installed vehicle wash down stations at HFS sites where there is the potential for the introduction of dieback into a national park / reserve;
  - undertaken soil sampling of the HFS lease area pre- and post HFS operations to ensure that the HFS operations did not contaminate the soil; and
  - provided the Regulatory Departments with reports on the environmental mitigation measures undertaken and results of all of the environmental monitoring undertaken.
3. The projects that we have worked on have been thoroughly risk-assessed prior to conducting HFS operations.
4. The client company has also held 'town hall' meetings in the locations they are working in so as to communicate to the various individuals and focus groups the relative facts as to the HFS operations; we have attended these meetings to provide an environmental and scientific understanding to the 'lay' groups.
5. To-date, my company's monitoring of the HFS sites has not shown any indication that the HFS operations have had a deleterious effect on the soil, groundwater or air quality at the locations subjected to HFS activities.
6. Western Australia requires natural gas to be part of our mix of energy products so as to provide our population and businesses with a stable and reliable, cost effective source of energy. Yes, renewables are making rapid progress and may at some point in the future be able to provide the bulk of our energy needs but not now nor, as far as I can determine, within the next 15 to 25 years. As such, our request to the Panel would be to advise the Government of Western Australia to lift the current Moratorium on HFS; as from our observations there has been no deleterious effect to human health, the environment or

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environmental values from HFS operations. I have yet to hear a cogent unemotional argument for the Moratorium to remain in place or to be shown scientific data (from Western Australia) that indicates that HFS operations in Western Australia are detrimental to human health, the environment or environmental values.

Kind regards

A handwritten signature in black ink that reads "T R Baldwin". The letters are cursive and connected, with a large initial "T" and "R".

T R Baldwin