# *Alice Springs – Jason Trevers*

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***Alice Springs Convention Centre, Alice Springs***

***Speakers: Jason Trevers***

Jason: Okay, my name's Jason. I…

Hon. Justice

Rachel Pepper: Could I have your full name please?

Jason: Jason Trevers.

Hon. Justice
Rachel Pepper: Thank you.

Jason: I'm here representing Alice Springs community, my friends, and my family.

Hon. Justice

Rachel Pepper: Thank you. So, sir, we have you down as representing Central Australian Frack Free Alliance, is that incorrect?

Jason: I'm affiliated or connected with that, so I want to say it's incorrect, that-

Hon. Justice

Rachel Pepper: Who are speaking on behalf of today? Just yourself or CAFFA?

Jason: I think there's other members speaking for CAFFA, so I'll speak on behalf of myself and family friends.

Hon. Justice

Rachel Pepper: No, thank you, alright.

Jason: As I said before, I presented here in the first round, and after that first round, I had a really good feeling that this inquiry had the right approach, had the ability to hear the public and is truly independent. After I read the interim report, I was shocked to see how misguided the inquiry had gone. I

had lost many hours sleep over it. Looking at different sort of sections there was ... Section 7411 within the report states that the risk to water flows and will likely to be low in arid areas of the Northern Territory from the extraction, and there was very little spring or ground-fed water in these areas. But in my experience in knowing local geology and around here, there's a lot of spring-fed or ground-water fed areas, and the inquiry needs to know the facts before it can make a judgement as to whether water is likely to be affected.

Parks and wildlife, Aboriginal elders, pastoralists with local knowledge should be consulted. If Aboriginals and animals survived in the arid regions, there must be permanent water sources, and water sources are likely to be that on the ground. Dropping water pressure and or water levels will affect these sources. Depressurizing large scales on the aquifers could result in aquifers being contaminated with neighbouring salt levels, and part of the start of the inquiry said based on current regulations. Well, currently where we're had the Palm Valley operation going, they have trucked millions of litres of water into Lake Lewis and dumped it there, of untreated, untested, product water in current regulation standards.

Water [inaudible] I feel were underestimated. The Department of Environment and Natural Resources submition to the inquiry on page six, said "two to 2.5 mega litres per stage would be used." The panel notes that "one to two mega litres of water is required to each state of the fracking and at least 20 stages of fracking are likely." So being a businessman, in my experience, it's always better to slightly overestimate a quote than greatly underestimate. Given that we're working with water and the survival of the entire region, let's use a 2.5 mega litre per stage, considering we were looking at, at least 20 stages. So for it to do a 50-stage frack, we would use 50 mega litres per frack plus one mega litre for drilling. A 10-well pad would use 510 mega litres, that's 204 Olympic-sized swimming pools of water. If we get 30% flow back, we'll have 153 mega litres, that's 61.2 Olympic-sized swimming pools of contaminated waste water. Then a daily flow [inaudible] rate is potentially as high as 4,500 litres per day. For 10 wells, that's 4,500 a day, and then 1,350,000 litres of collect water flowing per month.

In your report, you mentioned in the States, they've moved to banning lighters and using storage tanks. This is industry best practise. Industry best practise is being touted around as a token sort of gesture that the only industry actor that I am aware of is use of these storage tanks. Why are you still looking at the use of lying pigs and not recommending industry best practise? With the idea of hydraulic fracking should be minimised during the wet season. This is a naïve concept to assist the industry in getting a green light. What if the pits are full? Sixty plus Olympic sized swimming pools worth for one frack pad? Continuing to receive daily product water, and the wet season in the North was to deliver more than 2,000 millilitres provision for a one and 100-year rainfall. In the current climate we're experiencing consistent record-breaking events. Injection is not permitted, and treatment is not possible or economically viable.

Palm Valley and their economic impact statement were required to build a sump to be constructed of adequate size and contain any waste liquids. The sump they built was not close to being adequate. The company Magnalium Petroleum hired a local company to truck untreated, untested product water at Lake Lewis. It was illegally dumped. Millions of litres by road training carting 60 to 90,000 litres made the trip once or twice a week. In the Mereenie, 30 wells have been fracked, which could produce about 450 mega litres of flow back, 180 Olympic-sized swimming pools. Richard Cottee mentioned in his presentation to you last time, there was a swimming pools worth of flow back at Mereenie. As I looked at the Mereenie Fields on Google Maps, it seemed that the pits were unlined. Recycling flow back water is environmentally dependent, specific to water quality types, salts and minerals in the air, and therefore cannot be factored in at this stage as there is no guarantee it'll work.

Re-fracking is a commonplace practise after wells predicted levity has dropped off, which usually can occur within the first year or two. In North Dakota, I've heard of wells fracked 20 to 30 times. US areas are claiming 18 refracks, more commonly 10. Let's be conservative and say on average, wells are refracked 33 times in their life, that would mean 50 mega litres by three plus one mega litre for drilling, which would come to 172 Olympic sized damns for the 1,200 wells, which is unlikely. One-thousand two-hundred wells would only extract about 2% of the total predicted achievable gas for the field, using the spacings of the pads, which would use about 80% of the land claimed according to the models that was used within the article.

Let's look at well integrity. Acknowledging there is considerable evidence, starting in section 5.23, acknowledging that there is considerable evidence to indicate well integrity is an issue for the shale gas industry. I'm with you there. Just like to get an idea of time I've got left, please?

Hon. Justice

Rachel Pepper: You have 20 minutes.

Jason: Twenty minutes.

Hon. Justice

Rachel Pepper: Until you get the dreaded red card.

Jason: Yep. I'm with you there. Then you've got to say the performance of modern wells is much improved when compared to earlier wells and legacy wells. You then quote reference 13 from the proceedings of National Academy of Sciences, a scientific publication. The article was written by former and highly regarded scientists, one of them being Anthony Ingraffea. The article states their findings of analysing scientific data of casing and cementing permeant in oil and gas wells can lead to methane migration into the atmosphere and or underground drinking water sources. The analysis of 75,000 compliance reports from 41,000 conventional and unconventional oil

and gas wells in Pennsylvania drilled from the first of January 2000 to the December 31 of 2012.

You credit their finds indicated a six-fold higher incidents of cement and or casing issues for shale and gas wells compared to conventional wells. Their data showed that wells drilled splattered before 2009 had similar value wraps as wells drilled after. Unconventional wells sputtered in the Northeast region of Pennsylvania 2009, 2,714 wells were similarly [inaudible] in occurance, 9.18% of casing cement failure. Apia seems to have huge pressure to convince you otherwise, to give you skewed or misleading data that is not close or close to reality or worldwide data documented by peer-reviewed scientific articles. Well integrity failure has been a continued problem for the industry, and an extra layer of cement and steel in upper most section of a well scientifically has made no difference at all to well failure rates. The rest of the world is averaging between five and seven, at best, 1.9 where there is insufficient data well integrity issues. That somehow Apia convinces scientific inquiry to fracking to believe their delusional statistics that are coming from an industry that is well known to be unregulated or under regulated.

After giving you these rubbish figures, Apia say it is most commonly attributed to slow leakage of methane around the external casing and can be remediated by adding additional cement and pressure testing. This is also complete rubbish, and by printing it in your report, it demonstrates that you have no idea of the reality of the issues of the problems. Gas and other contaminates are migrating from the shale beds through the water aquifers to the surface. The only place cement can be placed is on the surface of the wellhead, a band-aid approach to make the well appear not to be failing. The well maybe failing from superficial layer shale deposits, and may not fail pressure tests.

The reality is failing well integrity will continue to get worse, loosened cement particles sandblasted a path making it a bigger exposing and corroding steel. The gas will then flow the path of least resistance through the water aquifer and find another path to the surface, possibly the next water bore. To the best of my knowledge, a leaking well cannot be fixed and all wells will eventually fail. Refine.org UK published an article titled, "Oil and Gas Wells and Their Integrity, implications for Shale and Unconventional Reserves." This peer-reviewed article written by nine scientists from five different universities or institutes, compiled from 25 reliable data sets from around the world including Australia. The data sets of more than four million on-shore hybrid carbon wells vary considerably, from 1.9% to 75% incidences of well integrity failure. Apia's data must have been missed during this extensive study.

Another well-documented fact is that the rate of well failures increases with age. Steel corrodes and cement degradation is an unsolved problem. Thirty to 50% of wells are failing at the end of their life. When a well is capped or plugged, it will continue to leak on the outside layer where the degradation continues rapidly. Eventually all steel and cement will decay completely,

leaving a large open pathway from the shale to the water and now air. One could use a corrosion-resistant reservoir [inaudible] that would be flexible instead of cement, but it might not be economically viable.

In one area you were looking for the guide lining principles document, we're going to ask that the Department of Mining and Infrastructure or whatever that department's called. I actually printed it out here from the guide lining principles document. Mind you, it's only a guideline, but it was a guideline for the minimal practises that the industry should use. And one of their parts within that was, "Reuse and recycle water wherever possible. Reuse rather than dispose of water wherever possible. Uses could include: Future fracking operations, irrigation, stock watering, dust suppression, construction, mine processes, industrial processes. Note that some treatment may be required."

This is "may" is also a legal loophole. Not being a "must, have to," so there ... It's not even a regulation yet, but it's basically giving the green light for using the water for dust suppression, irrigation of stock and watering. One thing we know about the product water that comes back, it is highly salty. Contains many, many other chemicals that are very difficult to retreat and sometimes even the technology is expensive or unavailable to test for all the different potential contaminates in it. The likelihood of having reverse osmosis or desalinization plants in the Outback is highly unlikely, and the fact that the government regulating department would even publish this sort of information shows they have no understanding of how to treat the water of the [inaudible] that it seems like it's written by the mining companies themselves.

Thank you.

The estimates of 1,000 to 2,000 wells as far as water use consumption is extremely low and unlikely compared to previous forecasts and industry data. In Australia, we have the ability to drill a lot more than 1,200 wells in 25 years. In 2013 to 2014 in Queensland, 1,634 wells were drilled. By the middle of 2015, the East Coast had 5,027 wells drilled ... No sorry, by the middle of 2013, the East Coast had 5,072 wells drilled, and by the end of 2015, we had 7,033 wells. Not to mention the big international drill companies, Slumber Jay and Halliburton, have many idle rigs and crews after the 2012 fracking bust, so there's a lot of potential to actually import crews and machinery. The Northern Territory government websites have shown maps predicting 28,331 wells in the Georgina Basin, and all other basins were predicted to have potentiation for more than 10,000 wells.

The EIA estimates that Beetaloo sub basin contains 191 trillion cubic feet of recoverable shale gas. The Beetaloo Basin is considered by some within the industry to be one of the most promising shale plays in the country. In page 36 of the summary, it says that almost 70% of the estimated shale of the NT is estimated occur in the Beetaloo Sub Basin. It’s quoted at one hundred and seventy-eight EJ, which converted to trillion cubic feet is 169 trillion cubic feet. So, that's sort of lower than the EIA estimate but in the ballpark.

Estimate is that EUR, which is estimates of ultimate reserves, and it's a way of predicting how much a gas well will actually produce in its lifetime. In the Barnett field, they predicted that the gas wells there would produce 2.2 billion cubic feet in its life. Marcellus was producing 3.6 to 3.9 billion cubic feet in its life. There was an average of between 6.6 and 1.8 within the 60% sort of average, most of them fell within that range. Using the EUR 3.6 billion cubic feet, we provide the estimates of the subtotal, I estimated you would need about 50,000 wells to recover the potential gas. So it would mean that the 1,000 wells predicted would only be looking at recovering 2% of what was actually there. Now I'm pretty sure the mining sort of companies, when they're sort of getting together in their meetings, they're not sort of thinking, "How much gas can we leave for the future generations?" Okay, I've got five minutes left. I want to play a video that I brought in and submitted to the panel last time that I was here.

Video narrator: Okay. Second myth, but a kernel of truth. Fluid migration from faulty wells is a rare phenomenon. It's true, it's rare. What's your definition of rare?

Hon. Justice

Rachel Pepper: Is this the one?

Jason: It's the one, but I was going to fast forward to 13 minutes and 30 seconds.

Hon. Justice

Rachel Pepper: Okay, so it can't fast forward on the presentation so if you want to instead, we'll make sure that the entirety of the presentation is…

Video narrator: …with kernel of truth. Fluid migration…

Jason: Um…

Hon. Justice

Rachel Pepper: Alright. We'll given it. We're not down the final minutes. What we'll do is we'll put ... If it's, with your consent, the entirety of that video of ... I believe you've already submitted it?

Jason: Yes.

Hon. Justice

Rachel Pepper: If you've already submitted it, then it's already on our website.

Jason: Yeah.

Hon. Justice

Rachel Pepper: In which case, perhaps you can just give us a summary of the segment that you wanted to show, an oral summary please.

Jason: Okay, well basically, the... Anthony [inaudible] was pointing to the fact that the industry know that the extra layers of cement and casing do nothing to actually reduce the effects of well failure. They have it in a lot of their documentation of the journals that they keep. He went through a lot of the environmental impact statements and infringements, and basically correlated a lot of the data, similar to what a lot of the other scientists have done with a lot of the other things I've referenced. But basically says that the industry know that there's no difference, and they're basically doing a whole propaganda, sort of saying that, "We've got new improvements. We've failed before, we were learning, but now we're experimenting in your backyard, but now we've got it all under control, and it's all good."

When they know that it's not, and that's using industry facts and sort of… and he explains a lot about how the wells corrode with the fact that the cement gets pumped down through the piping ways, all the way through to the end. Where you want the biggest pond is right at the top of the pipe near your water. That concrete gets pumped kilometres and then it comes back through, and it mixes with all the contaminants, dirt, the edges of hundreds of different parts of rocks so that by the time you get to the top, if you don't get a lock up, 'cause there's a lot of time pressure as millions of dollars per… a lot of dollars per minute. So you need to add additives to actually make the concrete set at a certain rate. If that judgement is wrong, you get what they call "lock up," where the concrete doesn't get to where you want. Shallow gas shale levels can then get access to the pipes straight up through to your water supply, and it's generally the outside land between the cement and rock, which is actually where you get most of your phase. So any extra couple of layers doesn't make any difference in the well failure rates.

Hon. Justice

Rachel Pepper: Finished?

Jason: I think so, yeah.

Hon. Justice

Rachel Pepper: You sure? You've still got minutes.

Jason: I've still got minutes, okay. Let me double check then.

Okay there was, with the 1,200 wells, I know we're talking about the volume of space that they take up, so between ten and twenty kilometres squared. If you use that volume by 20 kilometres squared by the 1,200 wells, you get 24,000 square kilometres and the estimated total area of the basin was 30,000 square kilometres. So, which means they are using 80% space of the Beetaloo Basin to extract 2.4% of the available gas over the next 25 years.

And sort of doing that math with the ... Maybe my math is out but it didn't add up to me.

Hon. Justice

Rachel Pepper: You're probably now out of time. Was there any concluding remark you wanted to make, Mr. Travers?

Jason: Yeah, I just ... I don't believe the industry's at a level where we're ready to trust. There so many misinformations that sort of go around, and I'm really glad we've got these scientific inquiry here so we can actually squish the misundstandings, the misconceptions of ideas, and really looking forward to actually putting this behind us. 'Cause it economically it's a complete… well part of why they're only estimating 1,200 is because they can access the sweet spots. Economically, it's not viable to do a full-scale operation because the economics isn't good at the moment. We've got world prices at gas demands sort of going down, as we've got mass production all over the world. So you've got the amount of gas being produced is larger than it's ever been and diminishing gas demands and the prices are not in the moment with large scale production.

Hon. Justice

Rachel Pepper: Thank you. Mr. Chair, just before I open up questions to the panel, I do want to just, perhaps as a matter of fairness to the panel, correct one thing that you said. At page 27 of the interim report, 5.3.2, well integrity, as you quite correctly said, we have indicated that there is considerable evidence to indicate that well integrity is an issue for the shale gas industry. What we go on to say that there are some obviously some quite alarming figures coming out of the shale gas fields of the United States, for example, Marcellus Basin in Pennsylvania. We do go on to record, not rely upon but record, the figures given to us by Apia. We also go on then to comment upon, sorry, I take that back, but certainly note that Queensland Gas Fields Commissions recorded data on well integrity.

The Western Australian Department of Mines and Petroleum analysis on well failures, which found that over 1,000 non-decommissioned wells had found that 9% had production shipping failures, and 3% had production casing failures. We also look at the South Australian data, and we look at the data from the West Australian Legislative Council Standing Committee on Environment and Public Affairs. And indeed we note that there's been one instance of a well blowout in the Northern Territories, so I think with great respect, Mr. Travers, it's a bit unfair to say that we have just solely relied on Apia data, which is what you seem to suggest.

Jason: Yeah, but the other points within where it refers back to that as saying that, "as stated in chapter five, well integrity issues are much better than they were in the past."

Hon. Justice

Rachel Pepper: They are. That's what the scientific data tells us. They are better than in the past, the question is whether or not they are good enough or adequate.

Jason: Well that, what you ... Was it number 13? In the references there, which you quoted, was actually presenting saying that data says it's actually worse post-2009 then prior, so reference 13 there is actually saying the opposite.

Hon. Justice

Rachel Pepper: Any questions from the panel? Yes, Dr. Beck.

Dr. Beck: Firstly, thank you for your presentation. It's good that you've done some sort of calculations and maths. I appreciate that, and I think that's to be commended. I just note that on your calculation, 50,000 wells that could be developed, that's based upon an estimate of, I think, what's called prospective resources that you quoted, which was, I think, about 169 trillion cubic feet. Well just to provide some context for that, prospective resources includes firstly, reserves which are commercial. It includes contingent resources, which maybe potentially commercial and prospective, perhaps unlikely in total, to be recovered. So, using prospective is a very large number of potential gas amount in place, and it's a very large number of wells that in terms of commercial places if you use prospective, sorry, actual reserves then you get a very different answer.

I just wanted personally to congratulate you, but just to note that those estimates are highly inflated because it's unlikely that those gas wells will be fully developed at that particular level of production.

Jason: Yeah, I do sort of realise that the ... Mine was on the higher end but I was sort of pointing out that yours was as well on the lower end and sort of there'd be something in the middle. But going on what other shale reserves have done, they are large, huge scale, where they are really aiming to extract lots of it. Look at how many wells are projected with 100,000 in Marcellus Basin, and other ones, which had tens of 1000s. Tens of 1000s is the range of where they're offered and aiming for.

Hon. Justice

Rachel Pepper: Yes, Professor Hart.

Prof. Hart: Could I ... Couple questions. One related to the water wall… estimates you had, I'm afraid you went too far so I couldn't get my head around those. But it'll be in the evidence.

Jason: Yes.

Prof. Hart: I just wanted to get your feeling, I mean, yeah, you worked on the high side behind us. That's okay, and came up with numbers.

Jason: Yeah.

Prof. Hart: But you ... To put it into context, you need to compare it with the resource that is potentially being… going to be tapped. So did you do that? I didn't hear that in your assessment.

Jason: The resource that was going to be tapped as far as ground water?

Prof. Hart: Ground waer resource, yeah.

Jason: Ground water resource?

Prof. Hart: The Cambrian large stone aquifer. I mean if industry is likely to tell you X, and your resource is X, it's bad news. You couldn't allow it to occur. If the resources are 100,000 times X, then you'd view it differently.

Jason: Okay, yep. That was definitely in your report, and yeah, I ... You would have that right there in front of you to say what the, baring in mind these are estimates. There's no metre that says, "This is how much flows are going in." I did see somewhere that you're expecting 2% recharge rate from the rainfall that actually comes, so a lot of it is evaporated, a lot of it runs off, so.

Prof. Hart: Okay. I thought the other comment on that one is in the estimates, and admittedly this is pretty rubbery at the moment in terms of what industry's likely to use, but the other part of the equation of how much were they using is how much can they recycle. How much the flow back and so forth. We're certainly seeking that sort of information and sorted from Santos, when was that, a couple of days ago in Darwin and we'll certainly seek it from the other counties. So we've got to put that into the equation.

The other point that I just wanted to question, I suppose, was the ... You made some comments on how much refracking was likely to occur. Again, I can't remember what you said that if ... Just seemed to me they were high.

Jason: So I said that ... I did hear high versions, but in my calculations, I put down maybe three refracks within a life time, 'cause after what, a year or two, the productivity of the wells goes right down. I mean, it takes millions, many, many thousands, millions of years for all the gas to come out of the shale into the little cracks. You frack it, you open up, and all the gases in those cracks get sucked out, and then all of sudden, over time the pressure there, cracks close up as well. So, when you refrack, you can refracture new ones then you get a whole new stimulation. So the graph sort of looks sort of like at the top area here. Production line and as the years go by, just sort of bottom of that. So you get a very low yield years into production, so fracking ...

Prof. Hart: Yeah, that's hypothetically what occurs and certainly what occurs in some, but not all. So, I guess the evidence that you're presenting, three over a lifetime, where's that come from? Does that come from shale fracking? Or ...

Jason: I was looking in Marcellus Basin where they've been doing a lot of shale fracking in through there-

Prof. Hart: We'll say.

Jason: So yeah.

Prof. Hart: Okay. So will you put that in your written, where you got those numbers from?

Jason: Okay.

Prof. Hart: Okay. Thanks very much.

Hon. Justice

Rachel Pepper: Yes, Dr. Jones.

Dr. Jones: I was just noting your opening comment about this issue of service water and its use thereof, and running it to the southern regions down here and how important that is. I was just looking at the report to refresh my memory as well.

Jason: Yeah, cool.

Dr. Jones: And it does refer specifically to the Beetaloo Basin where we ... And I'm certainly aware that in this part of the world, it's your springs coming off the mountain sides and the sun is really very important. But the our comment is specifically routed I there to the Beetaloo area, so rather than-

Jason: Okay, there was definitely that, but on the end of that sentence, it does say, "arid lands," and I did omit part of that sentence about the Beetaloo. But it did also have a reference to the arid lands so, okay.

Dr. Jones: I believe our reference was specifically to the Beetaloo in making that comment.

Panelist: Yes, it was.

Dr. Jones: Just the second comment about the rate of drilling. You use an analogy of the CSG fields in weight of drilling, well that's perhaps an unfair comparison, because those are a simple vertical wells, going down to about 600 metres, when we're talking much, much more extended drilling with very specialised drilling equipment. And there's not many of those rigs available, and even for deployment from the US. We gather that those rigs are largely tied up.

Hon. Justice

Rachel Pepper: Any further questions? Mr. Travers, thank you for coming on again, and you put considerable effort into your presentation for which we are grateful, and thank you for engaging with the inquiry again.

Jason: Thank you, thank you for your time.