Katherine – Dr. Errol Lawson

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Katherine

Speaker: Dr. Errol Lawson

Dr. Errol Lawson: Yes, Errol Lawson and, because I'm a long term thinker, I'm presuming to speak on behalf of my great grand children.

Hon. Justice Pepper: Yes whenever you're ready.

Dr. Errol Lawson: Okay, well, thank you. These are short notes, and I hope it makes it easy for you. I've started by setting the scene, it goes way back to bitter philosophy, decision to frack or not to frack is in the political domain where issues of public interests and the common good are decided. At least we hope they are. Community attitudes were polarised almost immediately on first exposure to the unconventional gas proposition four or five years ago, so it wasn't a green field that the industry came into. The inquiry processes and reports may not have changed many minds, there is a low level confidence in government, and mistrust of industry. Now I'm sure you found that ...

Hon. Justice Pepper: Yes.

Dr. Errol Lawson: Monumental failure of government due to failure to carry out due diligence and that's where I think a lot of the trouble started. But the industry insistence, thanks to you, Justice Pepper, on evidence based submission has led to a deeper understanding of the environmental, social and economic consequences of an unconventional guest industry. So, we had a cold start four or five years ago, you pushed it, pushed us into thinking through a lot of our objections, and I think the opponents are a lot better informed now, about all the issues involved and its good thing.

Okay the point, the straight, robust regulatory regime, the inquiries recommendations spell out the details of a robust regulatory regime, which is easy, I even find it easy to say. I think that's a good outcome because you define, as no previous inquiry has, that scope of a robust regulatory regime. Other inquires have just tossed it over the fence, and left it hanging there. You've defined what's there, there's a baseline for a robust regulatory regime and that's a challenge to everybody.

Industry can be relied upon the pushback, I'm sure they are already, and though because they are on the record of having said they're quite happy with the existing regulations, I'm quite sure they're pushing back far as they

can. Now, what are we faced with? The unconventional gas industry is an in early stage of exploration, there's a hell of a lot of work to be done and not much has been done.

Industry decisions can vest in production, the right of production, developmental in the future and I'm not as sure. My concern, is not about the volatility, or the robust regulatory regime, as defined, nor its intrinsic capability to withstand the industry pushback. What I am concerned is about the capability of the government to progressively fund and develop to operational maturity, the necessary resources, people equipment and funding, structures processes and interfaces with industry. To match the growth path of the gas industry though their stages of exploration, development, production, plugging and abandon and beyond. Well I mean there is that, say where having a document that says, "This is a robust regulatory regime, unless the government regulator is ready, in advance, of the industry as they go through their stages."

And that's what I'm concerned about, because that's an enormous project to build up the capability, in advance of it being needed progressively, to a time scale that's driven by the gas industry market in the world and the exploration results of the gas industry here. And on that note, I think the application of the user pays principle, which is very good, to fund the significant investment in a robust regime may not be feared to the early starters. So, kind of imagine Origin being happy, baring the cost of ... because they're the early starter, by a long way, baring the early cost, of the robust regime, when others come in and benefit from it. Make sense?

Hon. Justice Pepper: Yeah no makes sense, you're the first person to have raised this, so which is, again, why we have these consultation meeting because we always get valuable information and valuable thoughts so ...

Dr. Errol Lawson: As I pointed out to some PFAS people yesterday, I'm an old project engineer and things that stick in my mind, the time tables and cost and milestones. I just imagine, no, that's not it. Take the last specs. Our main concern about the long term well integrity, of the plugging and abandonment, that's why my great-grandchildren come to mind. Industry statements and regulated advice confirm that industry under current regulations has no responsibility for wells after plugging and abandonment. Sometime between completion and the geological processes that'll squeeze the hole shut, the cement seal between the outer most casing on the other rock will fail, resulting in loss of well integrity.

Industry, although on one hand, has invested interest in remediating loss of well integrity during production, because that's when they're making money, with loss of well integrity migration past develop from the frack reservoir to the surface and or intervening aquifers. One of the nice things they add at the end of the report was that they discovered there's a thing called ISO16530-1.2017, which refers to well integrity section 3.6, advises us, "Once a well had been abandoned, there is little prospect for re-entering the well for any purpose."

Now I'd really like to leave the industry's spokesman out of this but, on the way through I discovered that ISO16350.1 started, the early edition was 2014. And 2014, oh they use it to only second down, but 2014 is now withdrawn, the date 2014 stuck in my brain because, during 2014, we were addressed by two Santos representatives, who earnestly assured us, that the cement seal would last in perpetuity. And that was said twice, one of them winced and the other one said it twice, and if you want to know who the other one was I'll tell you.

Hon. Justice Pepper: Was it Origin and Santos?

Dr. Errol Lawson: Santos, when Matt Doman was working for Santos. We never saw that other one again. So, I've assured, just by reading that standard, that all my work in the previous submission, where I found out about well integrity on my behalf, was unnecessary because that describes it beautifully. So, I'm satisfied that there will be migration paths, so I've enquired the next step, which we almost addressed at the more previous address, “Is gas released after abandonment and can it and other contaminants migrate upwards”?

The answer I get, from the local experts around here, is one, there's no gas left, and that lightened me up, then I get another one, which is gas will rise. And that troubles me because if gas rises up something’s got to go down to replace it and then the third one hydrostatic pressure will keep it down. Now there’s three answers, which start off with, "It's no problem ... " in which case you wonder why they plug it anyway, to hydrostatic pressure will keep it down, and I think that applies during drilling and development. Well I don't see any hydrostatic pressure after it's abandoned, not if someone else thinks the gases will rise.

These examples of the diversity of opinion among experts, indicates a degree of uncertainty, which surely calls for application of the cautionary principle. I submit that the Inquiry needs to consider the very long term consequences of loss of well integrity of the plugging and abandonment. I put that in because I note that any answers I get from the industry and most of the information I see from the industry, stops at plugging and abandonment, they seem to have gotten a world view that, they virtually said that they have no responsibility.

As a greenhouse gas, methane in the atmosphere is 86 times as effective over a 20 year span as carbon dioxide. The worldwide increase in methane emissions challenges the claim that methane can be regarded as a transition fuel between coal and renewables. So a few things come together, the wells will leak eventually, over time, if there's a leak in the path there, something will come out and already methane emissions are on the increase and have been attributed to fracking operations. How are we going for time?

Hon. Justice Pepper: You've got about seven minutes.

Dr. Errol Lawson: Done. Economic impact, the ACIL Allen report is unconvincing that that defies the patent of previous reports in placing emphasis on jobs and dollars attributed to an unconventional gas industry. It seems that past well tourism

and gas industries can coexist, it seems that after the gas industry departs, the affected communities and environment revert to their prior condition. I regard that report is most efficient as a source of information on net value to the, I emphasis net value, and communities to gather in the government decisions.

It fails to break down full time equivalent jobs, which leads into direct and indirect and induced for each of the phases of exploration, appraisal, development, production, post abandonment and plugging. Again I revert to my own engineer experience, you break the task into phases, you estimate what the particular employment or resource implications are, and you map them out and add them up. And I can't believe that the gas companies can't ... haven't got someone in their planning departments ... much better figures than 524 FTE's over 20 years.

I mean that is just an insult, to any planning organisation that's serious at addressing a decision of this magnitude. And I think that's a deficiency that you should emphasise. The figures keep going, social impact ... in submission 530, I commented on the report of NT Fracking Social Impact / Beetaloo Sub-basin case study, Katherine 15 to December 207. Subsequently, I've read the report of that session by Coffey and it seems that my expectations of a social impact study differ markedly from those pursued Coffey. Now I've got time to say this, or can I go on?

Hon. Justice Pepper: No, go ahead.

Dr. Errol Lawson: I believe the following points are relevant. A mechanistic approach, which states, "No account of the predispositions of the group community being assessed is not likely to produce information on long term results." The impacts considered are initial impacts, the consequences of which are dependent on the characteristics of the affected group community. These are tangible short term impacts, whereas I consider an assessment of social impact requires an examination of the social capital, an intangible asset of the group, community and their resilience in dealing with long term (inaudible) consequences.

With regard to social licence to operate, the measures purposed by a source, CSIRO are questionable, the treatment is theoretical and takes no account of the previous interactions between, in this case, the government and industry as promoters of an unconventional gas industry and some members of the NT community. Here we are, where is a social licence deficit, I am mindful of one to height, one to five rule, which is that, "It takes five good interactions to offset one bad interaction ... " and so any treatment of what can the industry do to recover, build a social licence to operate.

Someone should say you got to have five good interactions and there is backlog of bad interactions that goes back four years at least. Summary, loss of well integrity in the long term, and migration of contaminants that surface at very high probability. Position of methane as a transitional fuel is being questioned, economic impact report is deficient, social impact report follows that the development is good and inevitable paradigm. Low confidence that

the Government can develop and sustain a robust regulatory regime, and until it does shouldn't start. I just added that.

The technology mix of the unconventional gas industry processes, from my engineering experience, indicate technological overreach, which, when coupled with [uberous], is a predictor of failure. The Inquiry is an example of participatory democracy, fracking is a contentious issue involving the common good and public interest well into the future. The political class in conflicted by their positions of promoter and regulator, I submit that the question should be put directly to the people.

Hon. Justice Pepper: Thank you Mr. Lawson. Any questions? Yes, Professor Hart.

Prof. Barry Hart: Can I just ... a question or two on your first summary point, which was the well integrity, long term well integrity.

Dr. Errol Lawson: Yes, yup.

Prof. Barry Hart: You make the point there that it's highly likely that the cement will detach in some sense. Yeah, I think there's some good evidence that that's likely to occur, just through the movement of the earth and the like. But what would you say to the fact that this is still 4 kilometres, 3-4 kilometres and it's got to be the integrity is going to be damaged all that distance for anything to get through?

Dr. Errol Lawson: That's why I put a hundred year lifetime span.

Prof. Barry Hart: Okay. Right

Dr. Errol Lawson: That's why my great-grandchildren are in mind.

Prof. Barry Hart: Okay.

Dr. Errol Lawson: Everything I hear from the industry, stops short at plugging and abandonment. And they may be right, I mean prior to that, it's in the commercial interest to fix any leaks, in doing. But after that they're out of here, if you let them.

Prof. Barry Hart: Just one other point though, you talk about, and you made the comments, when you asked about methane, but you talk about contaminants, in that last point. You mean methane.

Dr. Errol Lawson: I didn't want to exclude fluids that occur in some shale deposits and the heavy metals and any left overs from the fracking materials, so I was being totally exhaustive as I could be.

Prof. Barry Hart: But you only talked about methane, in your research.

Dr. Errol Lawson: I can't exclude it. I asked questions, well I did ask questions on, if there is a leak, is it possible for stuff for gas to go ...

Prof. Barry Hart: Yeah.

Dr. Errol Lawson: ... Because I was pursuing the path that said, you plug and abandon when you stop making money. Surly there's still gas down there, because you're not going to extract it to the last molecule. You're not that silly. So, gas will continue to be released. Now you could, I think decades, some wannabe answers you extracted from one of the industry blokes saw the, [Venture] suggested decades, might be enough. Might be a time scale. Well, I wanna go beyond that.

Prof. Barry Hart: Yeah ...

Dr. Errol Lawson: Because these people wanna live here ...

Prof. Barry Hart: It's put to us, along the lines of what's going to force the gas up.

Dr. Errol Lawson: Yup.

Prof. Barry Hart: Yup, it'll be depleted, we've been told about that.

Dr. Errol Lawson: It'll be depleted but it ...

Prof. Barry Hart: I know, I agree. But no doubt the pressure ... forcing that gas up, will be reduced.

Dr. Errol Lawson: Yeah, yup.

Prof. Barry Hart: Yeah okay so I guess that's the argument that's put to us, I terms of what is this gas if you damage the pathway, but fluids? That requires quite considerable amount of pressure, and we've been told it's less likely, much less likely.

Dr. Errol Lawson: Yeah, and that's really why I switched to the methane in the atmosphere because there is an observed, in fact the latest report was dated January 2018, which I discovered out of the Jet Propulsion Laboratories, which is that there is an observed increase in methane in the atmosphere and they've now developed a technique to distinguish between forest fires, biogenic and that released from fracking - and the fracking component is alarming.

Prof. Barry Hart: Yup, thank you very much.

Dr. Errol Lawson: Yes.

Hon. Justice Pepper: Thank you. Anything else? Yes, Dr. Jones.

Dr. David Jones: I note your comment about the regulator and that's something, which is weighing heavily on our minds about how, a regulatory system can be modularized, scaled or otherwise, competing with the growth of the industry and do you have any further thoughts about that?

Dr. Errol Lawson: Well I do, I think it's impossible. I've been there and you're trying to say ... here's a programme, which is in its infancy and even a tenth of what hear about Amungee is true, then there's a hell of a lot of technology assurance yet to be delivered and so we are now going to ask the Regulator, to second guess, to be ready five minutes before Origin comes in and says, "I wanna do the next one and is it gonna be ready?" Or is ready sitting there all dressed up, how many months ... and so whose going to stay? Who's going to take a job like that? I mean these are going to be extremely experienced people, very very dedicated, and are they going to sit in an office and be offered a job that they don't even know if it's going to proceed.

Dr. David Jones: Well certainly in the Queensland CSG experience, with the regulators there, was the industry actually sucked out the experience regulators both from the highest salaries, so they started out from a regulatory deficit.

Dr. Errol Lawson: Yup, so you've got that as well, you can find the people to start with and there's a very small population up here. So, you've sprung the trap. I don't think it's possible. And I don't think they should start, and I think that's the essence of your regulations, is don't start until you've got them and old buggers like me come along and say, " I wouldn't like to try and set that up." To say to someone highly qualified, highly experienced, it may be something like fishing for barramundi, then come here and sit on your bum waiting for a hell of a lot of exploration with all those questions of whether the process will work. And if it's hydrogen sulphide around that's a bit of a problem. So, the answer is, if you've got to where I was, and I didn't want to say this, but thank you.

Hon. Justice Pepper: Any other questions? Again thank you Dr Lawson for coming today and thank you for again your ... you've presented now three times, you've always given us great documents on your continued to participate in the Inquiry process and we are grateful. Thank you

Dr. Errol Lawson: Thank you.

Dr. David Jones: Thank you.