Merrilee Baker – Hearing Transcript

Please be advised that this transcript was produced from a video recording. As such, the quality and accuracy of the transcript cannot be guaranteed and the Inquiry is not liable for any errors.

10 March 2017

Darwin Convention Centre, Darwin

Speaker: Merrilee Baker

Merrilee Baker: Firstly, I'd like to offer my gratitude to the panel for accepting to be involved with this inquiry and engaging so openly and honestly with the public. I was a participant in yesterday's community forum and found it to be really well organised and a just process to hear all the voices present, so I thank you for that. I would also like to thank the honourable chief minister and his advisors for commissioning the inquest, and last, but not least, all the people who have taken the time to seek to understand the impacts of this industry, and hold hope for a better future for the planet than what we see as being predicted at the moment.

I'm grateful to Professor Melissa Haswell for providing her PowerPoint presentation as a framework for my presentation. This was forwarded to me because my focus was to be on the public health component. I'm not sure what the public health presentation on Alice Springs provided, but I'm hoping that it will be different because I'm not actually used to use this as a framework. After reading a vast amount of papers I had decided that what I wanted to include was covered by Professor Haswell briefly, but I thought for this panel there was a need for more robust reference to the evidence, so I've included excerpts and provided further reference where possible.

Looks like it's actually going to go ahead on its own, I think I forgot to take the timing off. I'd just like to also declare my stance as no human however embedded in scientific research is free of bias, and it's actually hardwired into our brains. The negativity bias is designed to protect us from danger. You take more notice of bad things that happen throughout our day than the good. We look for proof to support our own beliefs even though in science we're directed to be objective. And even the smallest influences, like the gifting of a pen, has been shown to influence behaviour. There's evidence around that that we're hardwired in some research. Getting to this is that I do talk a little about bias and that we're all sort of subject to that and really by applying mindfulness I've hoped that I've been able to at least be aware of my bias because obviously, I'm very connected to nature and things.

I've used my skills as a health professional to review as much of the literature as possible, very briefly, really only over the last three or four weeks. I've applied mindfulness skills to be aware of the bias as I said. My

mission is to arose an environmentally sustainable, social just, and spiritually fulfilling human existence on this planet. I've completed the game changer intense course which is designed by Pachamama Alliance who have an alliance with the Achuar in the Amazon jungle who have been fighting the petroleum company for over 20 years. I have hope that enough humans will respond by taking positive actions to make survival for all beings more possible. I speak from the feminine power base that is attuned with the connected human experience. This connectedness has been explored and verified by many scientists, especially in the fields of quantum physics, neuroscience, and neurobiology.

This is relevant to this paper as the first term of reference is to assist the scientific evidence to determine the nature and extent of the environmental impacts and risks including the cumulative impacts of the fracking which you're aware of all that quite well, obviously. Which leaves the background issues paper... I'm just sort of having a look at that. Other presenters that I've seen on the streamlining recreational fisheries and the Frack Free Darwin have highlighted the simplistic representation of the chemicals on page nine. I'd just like to add my concern here, and I've heard the response to that. I'd just also like to add that individuals have different levels of sensitivity. Whilst any individual may be able to avoid lipstick, or hairspray, or going and having a perm, if the air or water contains these chemicals they can't avoid them.

Research may not actually identify the effects on sensitive people because it's often across a broad spectrum of people who are usually well. A list of the chemicals used that are linked to ill health would obviously be useful, a lot of people have said that. It's often also hard to sift out whether people are talking about the ones that are going to be banned, that won't be allowed here and what will they use is something that people have also referenced. With the actual terms of reference in regard to the inquiry assessing the scientific evidence at yesterdays public forum the panel explained that the scientific evidence includes social sciences and evidences rather than just really being a very rigorous gold standard, double blind sort of placebo study type of evidence. I am actually making reference to the 2014 Hawk paper which dismissed some of that evidence because it believed its methodology was poor and lacked peer review.

Number two was to advise on the gaps. A lot of spoke very emotionally and strongly about requirements for baselines. I refer to the Lancet Countdown which is very prestigious medical journal and their project that they're doing for measuring, and that sleep video, very short video that I'm hoping will work. Number three for the risks advised on the level that would be considered acceptable. My questions are around the risk model which a lot of people mentioned as well who bears the risk, who determines what is the level of in reduction that is low as reasonably practicable, page 13. The other person from environmental defenders has raised that one as well.

Under mythology on number five to have regard to relevant domestic and international reviews, and you've just spoken to that you won't be ... It does actually say in there that the 2014 Hawk Report is an important document for the panel. I just wanted to mention I do have major concerns to the tone and the way I read that of bias. I don't know the person, I don't know anything more actually about it other than I've only just read it in the last couple of weeks. There are numerous background papers and inquiries that have been conducted around the world that identify numerous risks, but they all seem to come up with different recommendations so a lot of the stuff is biased. That's why I'm questioning bias. That can often be implicit people actually don't know what they don't. They don't know that they're being affected according to some studies that I've referenced before.

Some claim safety if best practise is utilised. Some say it would be okay with more rigorous baseline studies and regulation, some have placed moratoriums and require more evidence whilst others have placed bans on the industry. The recommendations are based on many assumptions and also some of them are quite dated. I will point to some other evidence about that changing recently. My reading has identified an area previously unknown to me, and that is that unconventional gas is not an acceptable breach to renewables. I wasn't actually aware of the other speaker when I was watching this. I was hoping this was going to be covered so I thought great, I can just scoop straight to mine and then by the time I left home it wasn't. I've just added in some very impromptu slides. This is just a cover page of the review of the current future methane emissions, which is the one that I have professor Hart the inside page. These cover a lot of the discussion that, sorry was it just I'm not sure of the gentleman's name who spoke to before me about the mitigation and the methane.

Hon. Justice Rachel Pepper: Mr. Tutty.

Merrilee Baker: Sorry, yes. A lot of these papers have what he was talking about in there.

Hon. Justice Rachel Pepper: Thank you.

Merrilee Baker: Multiple sources make reference to more immediate effects on the global warming that methane has over carbon-dioxide, especially in the short term. The differing reports as far as I read it seem to be related to the measuring. Over 20 years compared to over 100 years. If you're measuring over 20 years you'll see the effect of methane which does break down or whatever. It does actually have a lot larger heating capacity. It's beyond my scope to really go into it but I will provide these papers. One of them, the Climate Health Alliance, it's got the Public Health Association, Australian Nursing and Midwifery Association, the National Toxics Network, Australian Medical Students Association and several others who actually collaborated on the papers. These papers provide evidence that unconventional gas exploitation is not a breach to renewables that will reduce greenhouse gas and global

warming and that some scientific calculations indicate that the methane produced will increase warming more than coal.

That was just, again, just very quickly out of the Melbourne Institute out of that paper. They say that it's 86 times more powerful than carbon dioxide when its atmospheric warming impacts are considered. I mentioned that. Just looking at the vast potential of unconventional gas, that accumulative effect. These measurements have led the US Environmental Protection to increase the official estimates of methane emission from the total upstream oil. Really then looking at all of it all sort of put together, but I'm not expert and I'm sure that you'll be able to gain more from reading these papers than I can. The Climate Council that I mentioned, it's admission to independent review into the future security of the national electricity market. They say there are insufficient field studies and no baseline studies to quantify the impact of fugitive emissions associated with unconventional gas development and extraction in Australia. However, if methane emissions in Australia are equivalent to levels in the United States, any emissions benefit of choosing gas over coal may be cancelled out.

Also, they have recommended no new gas plants or infrastructure to be built because they're just locking that gas into the future, which was discussed yesterday. Today the cheapest new electricity sources are renewables and that's from Bloomberg New Energy Finance 2016. This paper I've read thoroughly and looked up some references. The PSR, Physicians for Social Responsibility. It's a compendium of scientific medical and media findings. In regard to the climate change effects, and this is an older, that's 2015, some of the other were 2016, even with 2017 paper. They say that natural gas is the bigger threat to climate than previously believed. Again, we've got that 20-year timeframe coming up with similar steps that they've got in there.

In the heavily drilled Barnett Shale of north-eastern Texas the methane emissions were shown to be 50% higher than the EPA had estimated. Fracking operations and associated infrastructure contribute 71%-85% of the methane emissions in the region. They're talking about not necessarily accidental leaks but from losses that are inherent to the design of the machinery or to operation use and therefore not possible to mitigate. The methane leakage at the levels now being documented negates and that way as previously hypothesised benefits from burning methane instead of coal in most existing power plants. You can go on to read more there. There's one more paper as well that I've accessed on that that has quite a fair ... It just mentions a little bit on the methane as well in that paper.

Unconventional gas is a climate risk, what you've got there, the fugitive emissions, methane being a very potent greenhouse gas and the of course obviously as we've mentioned before unconventional gas deters the investment in the much cleaner renewables of energies of wind and solar. I'll briefly just mention this is the environmental determinants of health and how climate change impacts that. I suppose that sort of on the assumption

that unconventional gas is not a breach to renewables and being aware of the numerous risks I sort of say why do we even consider trying to risk manage it? The United Nations Environment Programme issued a global environmental alert system, through that system back in 2012 said that it may have unavoidable environmental impacts that have all been mentioned before, that really can't be reversed.

The body of evidence for the health risks of climate change are indisputable and have been referred to as catastrophic. Health organisations and collaborations of leading researchers are producing material to guide the public on how to minimise their risk. These are just three leaflets that you would pick up generally in your public health or your GP place, whatever. They tell you how the individual can do things to help, the actions they can take for extreme heat waves, actions you can take to prepare for climate change, how to protect yourself from mosquitoes, all of those sorts of things. They're actually not even looking at prevention. It's like, "Well here are the leaflets and it's just up to you, the individual, to try and make yourself safe." Whereas really there should be a lot more emphasis on policy and on government in relation to the heat trapping gases such as carbon dioxide and methane.

That's gone forward, it shouldn't have got to there yet. I'm not sure, did Alice Spring at all talk about the environmental determinants of health? I'm sure you probably all quite sort of familiar. I mean, basically we need clean air, water security, nutritious foods, stable, safe climates, meaningful livelihoods, resilient and cohesive communities. Our previous speaker has obviously highlighted. Although that was I think coal seam gas but still all those sorts of things that can have effects on local and going out in these concentric circles to the global effects at the top level there and biodiversity and climate change.

Is it possible to see the little video? We can swap to that. The Lancet, the medical journal I mentioned, have started a project called the Lancet Countdown. They're sort of trying to look at it more from a positive angle. This one says it a lot better than I can if we can get it to work. The Lancet [inaudible 00:17:08] are looking at the steps to take on climate change as the greatest opportunity of the 21st century. [crosstalk 00:17:17]

Presentation Video: They're potentially catastrophic for human health. Climate change directly impacts human health resulting in loss of life from extreme weather like droughts, floods, and heat waves. It will also damage the ecosystems we rely on for good health resulting in more polluted air, reduced crop yields, and undernutrition, and threatening our supply of clean drinking water. Climate change will bring social change. As sea levels rise mass human migration will lead to overcrowding, pressure on scarce resources, and possibly violent conflict. Heat waves can be fatal for people ages 65 and over. This exposure will increase over the next century.

The demographic data shows populations are migrating and ageing into areas worst effected by climate change, and the true exposure increased for the over 65's is likely to be even greater. The current global energy mix which emphasises fossil fuels like coal, oil, and gas has a profound impact on human health as well as exacerbating climate change. Fossil fuels are already causing heart and lung disease directly through poor air quality. The long term effect from fossil fuels on global climate change will have even greater and more far reaching effects on human health.

The news isn't all bad. This diagram lays out many of the key responses to climate change, all of which have significant co-benefits for human health. Low carbon vehicles and active transport like walking and cycling decrease air pollution and carbon emissions, and also decrease obesity and cardiovascular disease. In fact, through these co-benefits and by preventing the potential loss to economic development, responding to climate change could be the biggest global health opportunity of the century. Most people view climate change as a threat but there's significant variation. Over 70% of the population in Brazil, South Korea, and Greece understand that climate change is a major threat compared to 40% or less in the USA and China. Trends of parts per million CO2 emissions are difficult to appreciate but increasing asthma rates, or exacerbating childhood undernutrition are tangible health problems that people relate to.

Whether we respond to climate change turning the threat it poses into an opportunity to improve public health is no longer a question of scientific evidence or technological capability. It is now entirely a matter of political commitment. The health profession has a vital role to play in driving this transition, communicating the risks, and ensuring climate change policies promote public health. We need to be at the forefront of this issue, helping to create a healthier future.

Hon. Justice Rachel Pepper: Five minutes left.

Merrilee Baker: Pretty much my message is that if we can look at the methane emissions, if the panel can really look into that you have the science background in that area that I don't. If we can make that assumption that it is significantly going to contribute when it isn't a breach, then why are we looking at it? You've mentioned going to employ an economist as well to look into the costs. Rather than looking at the risks let's actually see is this even worth looking at with all the other risks that have been identified. To the extent that we can actually look at it as a positive and think how can the NT actually be a leader in the world of instigating some policies to put that money and all the things that you would have to do with all this testing with kits and all those things which is great as a baseline, I admire that, I think it's a great idea, but you really need for the policies to be looking at the renewable of what they can do with that.

Just in case, the Lancet also goes into a whole lot of measures that they've identified. It would actually be something that a government would be able to say, "Look ..." Like some of the hospitals that are now green hospitals, and by having some measures that show that you have plans to reduce your greenhouse gases that you would actually be ported by someone like the Lancet. Just in case, some might see the terms of reference more narrowly than I do, and not accepting the climate change as a threat and looking at the unconventional gas may outweigh any reduction in carbon dioxide, they're not sort of looking at that. I'll just speak directly to the actual effects on public health of the fracking industry. The terms of reference include the whole spectrum of the industry, not just looking at the drilling of the wells and the extraction of the gas but how people view the effects on health will obviously depend on their angle of their lens of how wide a view they're looking at that.

This one, obviously the hydraulic fracking could be just looked at that, the whole thing. This says a lot of studies that have been done that look at the distance from the well site to the different problems, the potential public health problems, the terms of reference state that the only health effects on workers in the industry are beyond its scope. However, we have seen that as workers of the closest to hazard health effects are likely to be seen here first. Take asbestos as an example. The mining transport and use of silica is a major concern. I refer the panel to the evidence on silica as a cause of lung cancer and silicosis which scars the lung similarly to asbestos.

The compendium scientific medical media has more on that. That compendium as well lists a lot of the other health problems. There's evidence for skin and upper respiratory hospital admissions for heart and nerve problems, decreased average birth weights, and small gestational age infants, and higher incidents of heart defects at birth. Further research is needed into reported neuroendocrine disorders, especially those resulting in antenatal concerns for the unborn child. Of concerns are the radioactive releases. There is a lot of evidence in the form of measurements of the Marcellus shale in the USA with radium as high as 3,600 times the US Environment Protection Agency's limit for drinking water, as referenced before. I'll try not to spend too much but the whole paper in 2014 claims that it didn't dismiss reports of health defects, but the quite below indicates that any rigorous peer reviewed articles were taken into account.

I won't actually read it but it's the quote from 1.1.2, The Challenges for the Inquiry. Just the end part says, "While I'm not dismissing the importance of these concerns and the need for increased understanding and monitoring of validated research into this aspect, inquiry was not able to identify verified studies that supported the claims." So, they were saying that there was limited data. Basically, there's no data, there are no risks, is the way I read it. I don't know the intention of it but this is assume that because there is limited data suggesting the increased health risks that there are none. We've heard similar messages from the tobacco industry and then they

were infiltrated, the science with skewed and biased reports, and denied there was an issue.

Years ago, actually I read a script for scientific evolution of hazards or identifying things. One, there is no evidence. A few years later, two, okay you have some evidence but it's not gold standard or enough to take action. Three, okay there might be something in this. Four, this is a major health hazard. The unconventional gas industry, especially in its current expansive form, the OS, is still in its infancy for adequate studies into public health to be conducted. We thought about the lack of transparency of chemicals, you're aware of.

This is actually the paper of the,.. of the doctor. Because the Queensland government wasn't actually doing any, even the doctors they sent went to the town 70 kilometres away or something. This I confide as well. He has a lot of graphs in there. He said his methodology is proof to look at for the study because it actually went to the people that had the problems, but it's still very worthwhile having a look and I don't think should be disregarded.

Hon. Justice Rachel Pepper: You have one-minute left. If you want to make your concluding remarks, please do so.

Merrilee Baker: The science, this is just a picture of how the evidence has increased over the years. It's really only beginning to be developed. You're aware of the water. I did just look up this. We spoke yesterday about the water, the 30 gigalitres, what it relates to. This town is trying to harvest an additional 30 megalitres of storm water per year for irrigation of public open space. That's one fracking. The Lucerne uses like 6-8 megalitres per hectare for the whole year of irrigation. That one there was just a research into the haematological cancer that all of the children who lived, all under 24 who lived closest to the site, that was the highest area of where the cancers were found. That one can be read.

Obviously, you're aware of the social/emotional solastalgia which comes from feeling total despair that you have no power, that the land has been degraded can lead to depression and even suicide. Obviously, the competition and things like that. Basically, my concluding request of the panel is to consider that dude to the possibly irreversible risks to human health that the moratorium on fracking be continued in the NT until the effects of global warming on health by the year of the target for reductions, preferable 2050, but maybe 2030, is held to then, and then review the risk analysis. If the risk is reduced to an acceptable level, say by advances in technology, improved practise, baseline measurements in place, ill health effects have strong evidence to not occur, then the next generation will benefit from a guest reservoir that would be depleted in other parts of the world and likely to be more viable. Thank you.

Hon. Justice

Rachel Pepper: Thank you very much Miss Baker. You've got a wealth of information. I take it we'll have access to the slides [crosstalk 00:29:05] and you've produced that to the inquiry?

Merrilee Baker: Yes. I've got it on my stick today, you've got the PowerPoint on there but I can give you what I've said and all of the papers I've got that [crosstalk 00:29:17]

Hon. Justice Rachel Pepper: Yes please, that would be absolutely invaluable. Thank you very much. Any questions? Yes, Professor Priestly.

Prof. Brian Priestly: I was just going to comment thank you for that presentation. Many of the issues that you've raised are things that I'll need to consider as part of the inquiry. I have some of the references you've cited but I think that by providing your PowerPoint will inevitably chase up some more of those important references, thank you very much for that.

Merrilee Baker: Thanks.

Hon. Justice Rachel Pepper: Yes, Dr. Beck.

Dr. Vaughan Beck: Yes, I just echo the comments from Professor Priestly that in terms of the greenhouse gases you've referenced a number of papers and certainly some of those I'm familiar with so it's good to be able to see that you've accessed those. I'd be interested to see the other ones that you've been using as well.

Hon. Justice Rachel Pepper: I should say that the inquiry does take a more expansive view of the shale gas industry, unconventional shale gas industry I don't think encapsulates many of the risks and themes. You have seen that from the paper. There being no further questions, again thank you very much for your detailed and comprehensive presentation Miss Baker. We'll now adjourn for an hour break and resume at 8:00 PM. Thank you.