STANDING COMMITTEE ON ENVIRONMENT AND PUBLIC AFFAIRS

INQUIRY INTO THE IMPLICATIONS FOR WESTERN AUSTRALIA OF HYDRAULIC FRACTURING FOR UNCONVENTIONAL GAS

TRANSCRIPT OF EVIDENCE
TAKEN AT PERTH
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SESSION ONE

Members

Hon Simon O'Brien (Chairman)
Hon Stephen Dawson (Deputy Chairman)
Hon Brian Ellis
Hon Paul Brown
Hon Samantha Rowe

Hearing commenced at 10.30 am

Mr PIERS VERSTEGEN
Director, Conservation Council of WA, sworn and examined:

The CHAIRMAN: On behalf of the committee, I would like to welcome you to the meeting this morning, Mr Verstegen. Before we begin I want to address a couple of remarks to members of the public who are here, if you bear with me.

Welcome. It is great to see such a high level of interest in a committee inquiry. It reassures us, as members of the committee, that we are inquiring into matters that are of public interest and of importance to people. This is a proceeding of the Parliament of Western Australia. There are certain matters I would like to draw to your attention. Firstly, it is important that proceedings of the Parliament are open to be witnessed by the public. Your presence here today supports that, so I thank you for it. It is also important, of course, that any proceeding of the Parliament such as this hearing continues in an atmosphere that is uninterrupted where witnesses or others have no sense of intimidation or distraction from the business that they are about so that the public gallery can observe that the proceedings of the Parliament are going on in a way that is in the best interests of the wider public and uninterrupted by interjection or other interruption from anyone outside. It is important we have a public gallery and, again, I thank you for being here, but I must respectfully advise that the public gallery is not to be the source of any interjection, spontaneous applause, calls of support or opposition. I thank you in advance for that courtesy that I am sure you will observe.

Returning to our witness; firstly, I must ask you to take the oath or affirmation.

[Witness took the affirmation.]

The CHAIRMAN: You will have signed a document entitled "Information for Witnesses". Have you read and understood that document?

Mr Verstegen: I have, thank you, Chair.

The CHAIRMAN: These proceedings are being recorded by Hansard. A transcript of your evidence will be provided to you. To assist the committee and Hansard, can you please quote the full title of any document you refer to during the course of the hearing for the record. I remind you that your transcript will become a matter for the public record. If, for some reason, you wish to make a confidential statement during today's proceedings, you should request that the evidence be taken in closed session. If the committee grants your request, any public and media in attendance will be excluded from the hearing. Please note that until such time as the transcript of your public evidence is finalised, it should not be made public. I advise you that publication or disclosure of the uncorrected transcript of evidence may constitute contempt of Parliament and may mean that the material published or disclosed is not subject to parliamentary privilege.

I invite you, Mr Verstegen, if you would like, to make an opening statement to the committee.

Mr Verstegen: Thank you, Chair, I would like to make an opening statement. As I said, I am here representing the Conservation Council of Western Australia, the peak non-government independent environment group for the state. We represent around about 100 member groups throughout Western Australia and tens of thousands of individuals who are supporters of the council. The council believes that this is an extremely important issue to be investigating and we thank you for taking on this investigation. The reason is that we believe that gas fracking has the potential to be the most significant issue facing Western Australia in terms of environmental impact and public health in the future. We understand that the terms of reference that you are working under are

potentially relatively narrow and do not necessarily cover all the issues of concern that we may have raised and others have raised. I am going to make just a broad statement to start with in relation to the claim that I made that gas fracking has the potential to be the most significant environmental issue facing the state in the future.

We have around about 270 trillion cubic feet of gas that has been discovered in this state. That is a massive gas resource. If it was developed it is one of the largest potential sources of carbon pollution on the planet. Gas fracking has a very, very significant surface impact. We are talking about hundreds or thousands of gas wells in areas of productive farmland or, indeed, areas of very significant environmental and biodiversity value. We are talking about an industry that has caused serious water pollution and very serious risks to surface and groundwater in other places of the world where it has been deployed. Our submission goes into significant detail on that matter. We are also talking about an industry that causes very significant air pollution. It is often the air pollution that is the cause of human health impacts in the communities where gas fracking has taken place elsewhere. We have looked into the issues around the social impacts of gas fracking and communities and we are very concerned that the gas fracking industry and the development pattern of the industry has the potential to fracture not just the rocks below communities, but the communities themselves. We have an industry that is typified by systemic regulatory inadequacy and regulatory failure and, indeed, regulatory capture. Our submission goes into some detail on those matters. I would very much welcome more questions on those, in particular the regulatory framework we have in place in Western Australia. Before I do that, I want to make a statement on the record, which is more from a personal perspective because it is a statement from some personal experience that I have with visiting gas fracking sites in the United States. I tend to ramble on so I have written some of this down so that I can constrain myself. I do not want to chew up too much time, so, you will forgive me if I refer to these documents.

The US Department of State enabled me to go on an international visitor leadership program to the United States around 18 months ago. One of the things I asked to have a look at as part of that program, which was hosted by the US Department of State, was some gas fracking activities and to meet the regulators and to meet experts in this field so I would just like to talk a little bit about that experience. Before we visited areas of gas fracking in Marcellus shale country in Pennsylvania, we met with the regulators in Pittsburgh and they told us the familiar stories—the kind of stories you see printed in *The West Australian*—and they kept repeating one particular line, which is that there is no proven water contamination from gas fracking. We came away from that meeting genuinely wondering whether the reports and thousands of press statements and stories of leaking wells and health impacts were actually overblown. We genuinely came away from it. Then we went the next day to visit some families and some farms that had gas fracking on their land. After we got through the enormous stack of pancakes that they provided for us in the American fashion we had a discussion with the family. They had a tow truck business; they had moved to a small farm to get away from town and where the kids could have some horses. Pretty soon after they had finished building the house they realised they did not have the rights to the gas resources under their land. That had been sold as a separate title prior to them buying the land and they were not even notified when the first drill rigs came onto their land. They confronted the drillers, so the gas company stationed a 24-hour armed security guard in a car on their land to stop them coming near the drilling operations. Sure enough, we passed it on the way up the driveway.

Then the stories started coming out. First they noticed they were getting headaches, nose bleeds, itchy red eyes. They showed us laboratory analysis printouts of air quality inside their home. There were levels of benzene and other toxic carcinogenic, volatile organic compounds in the air way above health guidelines. Next they found their dog dead one morning. They think he wandered over to the fracking flow-back pond and drank some of the water. They noticed their horses had raw skin around their eyes from where they had been rubbing them. They took us to what we would call a large creek running through their property. There was chemical foam in the creek and the water was

running white with drilling mud. There was a strong smell of chemicals. They took us to a natural spring that was bubbling with methane and they showed us how they could set that on fire. They took us to some of the gas wells on their farm. The closest one was about 250 metres from their house. This was where the security guard was sitting watching their house and their children 24 hours a day. As we approached the gas well we could see there was gas bubbling up from around the well casing. There had been rain and water had collected around the well annulus, so you could see the bubbles clearly. They told us that most of the wells on their farm were bubbling like this and, sure enough, they were. Next they showed us the water well where the drinking water for their house had originally come from. By that time the university professor had arrived and he was working with hundreds of families across Pennsylvania to help them monitor the water themselves. We helped him collect some water samples and after running some tests with a kit in the back of his car, he said, "No, sorry; it's still not safe to drink." They kept talking about the buffalo they had to buy so they could have water delivered to the farm. We did not know what they were talking about at first, until they showed us the plastic water storage tank. We laughed. We are obviously familiar with that here but this is a place where they do not have that kind of water storage because they rely on their groundwater.

There was no town water where they were and a lady from a neighbouring country actually turned up at the farm as we got back to the farmhouse. She said she had been locked in a legal battle to get compensation for her sick son. It turned out she lived right next to a compressor station and the air pollution from the thousands of these facilities dotted all over the countryside and in towns was apparently relatively unregulated. At first she was careful with details because she was in negotiation and had signed a confidentiality agreement, but as her emotions started to get the better of her, her stories and the tears started to flow. Two years ago, her son had begun to get blood noses and headaches—the familiar story. This went on for months and one night she found her son fitting and convulsing in his sleep. It happened again and again until a doctor told her that her son had a serious neurological disorder and they had to move away from the home they were in. This was not a wealthy family but she had been living on and off for a year in a motel which she was paying for on her credit card along with her son's medical bills. Then they showed us photographs of another farmer who found their cattle dead one morning in a field next to a fracking well.

These were people who could not afford to move off their land. They were industrial refugees living a nightmare. We asked them about jobs. They said, "What jobs? The workers have come from Texas. They come in like they own the place—no respect—and push up the prices in the motel so now we can't even afford to get away from our own homes." What was most difficult to believe was that the authorities—the regulators—had done nothing to protect them. There had been no baseline monitoring of groundwater or air quality before the fracking started, so there was no way to prove that the contamination was linked to the fracking. Perhaps it was natural contamination and they had not noticed it before. We started to realise why, as we drove along the turnpike back to Pittsburgh. Every kilometre or so there was a huge billboard advertising the benefits and jobs that had been brought with the fracking industry. It was just before the election and they were interspersed with billboards sponsored by the fracking industry saying that President Obama's EPA was killing jobs and killing the economy.

We learnt from our guide that the gas industry had pumped hundreds of millions of dollars into election campaigns for governors in gas fracking states who had not asked too many questions. We went back to the regulators and asked them directly about what we had seen. They sheepishly said that the contamination we had seen was not proven to be linked with gas fracking. They did say they were aware of many cases, however, of well failure but they pointed out that this was not the fracking process itself. Then it dawned upon us that this constant claim that there is no evidence linking gas fracking to groundwater pollution is because they can simply use language to say it is not the fracking process itself of the rocks below the ground, but it is the failure of the wells. It is simply a trick of language.

After this we visited the University of Pittsburgh where we got a briefing from the program manager of FracTracker, a not-for-profit spin-off from the university, which was tracking the impacts of fracking and had created a database of fracking accidents and incidents. We got onto the topic of pipeline explosions. It turns out that thousands of kilometres of pipelines linking wells all over the USA leak and explode all the time. When gas leaks into the atmosphere it is not detected very easily, but when it leaks into a basement or barn and the farmer goes to start his tractor in the morning, the consequences can be horrific. It turns out that in the two years before we visited there had been 18 deaths of workers or others due to these kinds of incidents and these were just the ones that were known or reported. I can go on and on about that particular visit because we had a lot more information and I would be pleased to provide any more to the council, but I am conscious that I do not want to chew up too much of your time, particularly the time you have got to cross-examine the industry that is responsible for these kinds of impacts.

[10.45 am]

I would like to, if I can, quickly go into some issues that we see emerging here in Western Australia with the regulatory framework and why this is a very similar story to what we have seen in the United States. First we have a government policy position, or evident government policy position, that gas fracking in Western Australia is not going to be regulated under the normal environmental regulations that control pollution from all sorts of other industries. They are the Environmental Protection Act regulations under part 5 on pollution control and the Environmental Protection Act process for environmental impact assessment by the EPA under part IV of the Environmental Protection Act. So far we have had gas fracking operations that have not been subject to any licensing or any requirement for licensing under the pollution control regulations of the Environmental Protection Act—those regulations that were designed to regulate these types of industries. How is it that one of the most toxic polluting industries is exempt from those kinds of regulations?

We have also seen gas fracking taking place in Western Australia and new proposals for more gas fracking in Western Australia that have not been assessed by the Environmental Protection Authority. The authority has said and the minister has said that our policy position is that gas fracking will be regulated by the Department of Mines and Petroleum. The regulatory regime that is in place that the Department of Mines and Petroleum have in relation to gas fracking is well known to be significantly flawed; that is why the department is at the moment going through a process of upgrading and updating those regulations. Unfortunately—I have had a look at the draft regulations—I cannot actually find any reference in the most recently published ones to environmental protection or protection of groundwater or protection of public or human health. They are out for public consultation and there will no doubt be a process in relation to that. However, I submit that this is not the appropriate mechanism to be regulating such an industry. It is a series of acts that do not have adequate head powers in relation to protection of the environment. The petroleum act is not set up for that purpose. The act that is set up for that purpose is the Environmental Protection Act, and the environmental agencies are the ones that should be regulating these activities.

So already we have evidence of a regulatory system, which is exempting gas fracking from the normal regulations that apply to other polluting industries. Why is the Department of Mines and Petroleum not the right agency to be regulating this industry? Put simply, they have a very significant conflict of interest. It is the charter of that agency and part of its role to promote gas fracking and to subsidise gas fracking. We have senior regulators within the Department of Mines and Petroleum, the same people who are signing off on environmental plans—I understand this may have now changed—at the time making statements in the public domain that there are no environmental risks associated with gas fracking, that environmental organisations and individuals raising these risks are fearmongering and that the risks are overblown. That is not the kind of thing that you expect from an independent environmental regulator.

I am conscious that you want some time for questions, but I just want to quickly go over a few of the myths associated with gas fracking that have been perpetuated here in Western Australia. The first one is that we have deep shales, and because of the depth of these shales several kilometres below the ground the risk of groundwater pollution is reduced. The shales that we have are at very similar depths to the shales that are the subject of gas fracking in the United States. The pathways to contamination from those shale gas fracking activities are not so much from the fracking itself, which is several kilometres below the ground, but from well failure. In our investigations, and in my personal contact with professors in American universities that study these things and study the integrity of wells, what they tell me is that they cannot find wells and materials and well casings that are capable of withstanding the type of pressure that is put into these wells, tens of thousands of pounds per square inch, from gas fracking in a reliable way. The well failure rate in the first year after drilling has been found—and I table evidence of this—to be around six to seven per cent of wells. How many of them fail after that is yet to be seen, because there is inadequate monitoring in many of these places. What we are extremely concerned about is that not only the wells will fail as they are being drilled and fracked, but also after they are abandoned the casings will rust, pathways for contamination of gas and potentially fracking chemicals into groundwater will be formed and by that time fracking companies will be long gone. The idea that because these areas are so deep then they are not likely to cause groundwater contamination is simply a myth. It is part of the myth that actually goes against the industry's own claim that it is not the fracking itself that causes the groundwater pollution; it is actually the well failure, which they do not want to talk about.

The other myth that I wanted to quickly mention is that Western Australia has huge experience with gas fracking. We have heard from the Department of Mines and Petroleum and the gas fracking industry itself as recently as yesterday that there have been over 700 wells fracked here in Western Australia with no groundwater pollution. That is another myth. The fracking that has occurred here in Western Australia has been in shallow oil wells. It has been predominantly on Barrow Island. It has not used the kinds of pressures, the kinds of chemicals that they use in unconventional gas fracking with slickwater techniques. It is a completely different type of gas fracking, and it is completely erroneous to compare it with what is proposed for onshore gas fracking. Other myths are that environmental organisations and individuals concerned about shale gas fracking are confusing it with coal seam gas, and that coal seam gas has impacts on the environment but shale gas fracking does not. There is no confusion of that sort. We understand what the differences are, we understand what the similarities are and people on the ground do as well.

Another myth is that this is a clean source of fuel—a clean source of energy. What we know is that when we look at gas fracking from the frack well to the power station, the overall greenhouse gas signature of that is very, very high and up in the realm of coal burning. That is because of the very significant fugitive methane leakage that occurs, not just at the fracking wells themselves, but uncontrolled methane leakage through groundwater and through pipe systems. As we know, methane is much, much more significant as a greenhouse gas than carbon dioxide. So gas fracking is not a clean fuel. Even if it was, gas fracking from Western Australia is very unlikely to be substituting coal burning anywhere else. There has been evidence by WorleyParsons and others who have done studies looking at where our LNG or gas that we would export from gas fracking gas is likely to go. It is likely to go to Japan and other countries that are rapidly developing and deploying renewable energy resources. We have a situation where our gas is likely to displace growth in renewable energy, not displace coal. I have asked the gas fracking industry many times but they cannot give me one example where the sale of gas into a country has resulted in one less coal-fired power station being built or indeed one being closed down.

I can go on and on and on. I think I have probably chewed up enough of my time in the opening statement. I would like to table some documents. There have been some claims that there is no evidence at all, as I said before, of gas fracking having impacts on communities or polluting water or having environmental impacts, so I would just like to table some of these documents.

Unfortunately, we could not print out as many as we would like because our printer broke down—maybe it was a bit offended by the content of the material that it was printing!—but I would just like to read some of the titles of a few of the documents that we would like to table. These are a mixture of peer-reviewed reports, media stories, and articles and the like from a whole range of different places all around the world where gas fracking has occurred.

The CHAIRMAN: Are they all individual documents there?

Mr Verstegen: Yes, they are. I do not intend to read the title of every single one of them, because we will be here all day. I hope I can table them without doing that, but I will read a few: "Impacted Families Settle With Gas Giant For $1.6M Without Gag Order"; "Hydraulic Fracturing Poses Substantial Water Pollution Risks, Analysts Say"; "Mayor Calvin Tillman Leaves Dish, Texas Fearing 'Fracking' Effects On Family's Health"; "4 states confirm water pollution from drilling"; "The Crisis in Oil & Gas Regulatory Enforcement"; "Fracking can produce hormone-damaging chemicals"; "Voices from the Shale–Fracing WILL Contaminate NY's Acquifers–Former DEC Environmental Engineering Technician"; "Santos court case over Pilliga spill"—that is one from New South Wales; "Estrogen and Androgen Receptor Activities of Hydraulic Fracturing Chemicals and Surface and Ground Water in a Drilling-Dense Region"; "Gas firm to pay for bulldozed Logan County cemetery"; "Worker Dead after Injuries in Gas Flash Fire"; "Fracking contamination more common than US states report, says new review"; "Doctors say drilling law hurts public health".

I can go on and on and on but I will not because I would like to leave some time for you to ask questions, committee, but thanks for the opportunity to give the opening statement.

The CHAIRMAN: Thanks very much, Mr Verstegen, for that comprehensive opening statement. In relation firstly to the large file of documents that you have there, some titles of which you have read into the record, we will receive that as part of your submission because, as you point out, we do not have the opportunity now or time to fully identify and formally table the documents. But we are happy to receive those and the committee will examine them.

Mr Verstegen: Sure.

The CHAIRMAN: I was also going to point out to you that in your narrative about your field visit to the US, if you wanted to provide the full version, if you did not read it all, and if you wanted to provide further of that by way of supplementary information, subsequent to this meeting we would all be very interested to read it and find out where you went and who you saw and so on.

Mr Verstegen: I would be happy to do that.

The CHAIRMAN: And that might form the basis of some further inquiries from our end.

Mr Verstegen: I would encourage you. I probably suspect you do not have the resources, but I would certainly encourage you to go and visit some of these communities if you can, and I would certainly encourage you to go and visit communities in other parts of Western Australia that are going to be affected by this industry, or likely to be affected. I really encourage a trip to Broome actually, because there is very significant community concern in Aboriginal communities, some of which have made comments and statements to your committee but I think would be well worth your engaging with.

The CHAIRMAN: Thanks for that advice because, of course, the process of seeking submissions and conducting hearings is in very large part about the gathering of information. Generally, it is the case that we invite witnesses to make a statement, rather than us responding to questions or providing explanations. But there is one thing that has come up that I would like to just clarify, because in your submission and others there is reference to our terms of reference. This comment is intended just to reassure. I have just gone back to a media release from August which highlights four particular areas that we are going to inquire into, but it just occurred to me on re-reading it that people or interested parties may well have formed the view that that is all we are looking at. In fact,

our formal terms of reference are to inquire into the implications for Western Australia of hydraulic fracturing for unconventional gas.

Mr Verstegen: Including the wells?

The CHAIRMAN: Yes, including a series of further broad headings. So I just want to reassure anybody observing these proceedings or the progress of the inquiry that it is our intention to actually have as broad a terms of reference as we possibly could, and in support of that I point out that we have received 114 or so submissions, great and small, which actually canvass a whole range of those areas, including ones that you have spoken of. It is our committee's view that they are all within terms of reference. We have formally received all of those submissions and we would like to thank the authors of the submissions for actually raising all of the matters that they are concerned about so that we can, having had them identified to us, conduct our own further inquiries. So, I hope that addresses one point.

Mr Verstegen: Thank you, Chair, for that explanation. It certainly gives us more confidence in the committee.

[11.00 am]

The CHAIRMAN: I think that might have been a misunderstanding caused by the way an earlier release went out. I have a couple of questions to ask, but I know that each of my colleagues have some questions as well, so we will press on. You have referred in your submission to a number of matters that do invite further examination, but a lot of those are actually matters for us to ask questions of other parties, so we will receive that information, and a lot of it is for follow-up at a separate time. The one point that you did raise, though, in your submission, which I would ask you to enlarge on a little bit now, is that you point out that of the relative regulations that apply in this area, they are generally what might be described as prescriptive rather than outcomes based. I am just wondering if you could discuss that a little further —

Mr Verstegen: Sure.

The CHAIRMAN: — as to how you define the outcomes versus prescriptive and what is wrong with that.

Mr Verstegen: Thank you for the question; it is an extremely important one. To date, the regulatory framework in Western Australia, as we understand it, for gas fracking and petroleum activities has been a prescriptive one. What that means is that there are certain design criteria that are applied. Companies have to drill their wells and design their wells and proceed to manage their wells in a way that is prescribed in quite significant detail. The concern that we have in relation to that style of regulations is that if that activity occurs, and it occurs in line with what is being prescribed by the regulator, and the activity then causes an environmental risk, then the proponent can simply say, "Well, we've done what's required of us. We've done this according to your prescription. It's caused an environmental risk, but we had no choice but to do it according to your prescription and, therefore, the environmental risk is potentially a risk responsibility that rests with the state." I think that is one of the issues with prescriptive regulations—there are others that I do not need to go into. In response to that, the Department of Mines and Petroleum has said, "Yes, we acknowledge that there are some problems with our regulatory framework." That is only one of them. And, by the way, there was a Tina Hunter review, which I am sure you have read or has been submitted to you, which found a whole range of other issues and failings with the existing regulations. So, they have responded to that. They have published some new environmental regulations, unfortunately, for gas fracking. Unfortunately, those environmental regulations do not cover the kinds of issues that we have been raising in relation to groundwater contamination, surface water contamination, air quality issues, and their response has been, "Okay. Well, we're going to update some other regulations that apply to gas fracking—some technical regulations that apply to well construction", and there has been a document released just recently that has some draft regulations of that sort. This is an

attempt to move away from prescriptive regulations and to move towards risk-based regulations, but I think—and this is only a draft document, and we will be making a submission to it—they have completely failed to identify what they actually consider to be an environmental risk, or even mention environmental risks. In fact, the entire risk definition process in the new regulations, as we understand it, would rest with the proponent themselves. So they would identify risks that they thought were the case, and they would identify ways of managing those risks, and then they would potentially be held accountable for managing those risks that they have identified.

So, this is not an acceptable regulatory framework either. I have made mention of the fact before that we do not believe the Department of Mines and Petroleum is the appropriate regulatory agency, but whatever regulatory agency you have, what we want to see is actual criteria for what kind of environmental impact would be tolerated—that is, how much contamination of groundwater would be tolerated, if any; how much pollution of the air would be tolerated, if any; and then a process for enforcement of those things so that if those tolerance limits are exceeded, then there is a process of not only bringing to bear enforcement actions, which could be fines or removing the ability for those proponents to keep drilling the wells, but also making good provisions so they should be required to make good for the impact of those contamination or pollution events.

The CHAIRMAN: Thanks for that. I also noted your comments about industry capture of certain government agencies, or one in particular, although I think you have discussed that adequately this morning, and that is something I will explore on another occasion.

Mr Verstegen: Chair, if I could just add not in specific relation to that, but in relation to the regulatory framework in general, normally speaking, environmentally significant activities in Western Australia are subject to assessment by the Environmental Protection Authority, and organisations like ourselves have been referring a number of the gas fracking proposals to the Environmental Protection Authority for assessment. What they have been saying is that, "We are not going to assess these activities, not because they do not have significant environmental risks, but because we believe that the Department of Mines and Petroleum regulatory framework and others—possibly the Department of Water et cetera—are capable of managing those risks." Now, that is pretty odd to us, given that the Department of Mines and Petroleum themselves have actually said, "We acknowledge there are serious failures and problems with our own regulatory framework", and that is why they are moving to improve it. So we have got, on the one hand, an environmental regulator, which no doubt is subject to significant political pressure to uphold the government policy that gas fracking is not going to be managed under the Environmental Protection Act, saying that, "We trust DMP; we trust their regulatory framework", and, on the other hand, we have got that very agency saying, "We know there are problems with it. We know that we need to fix something here." So, we have got a number of gas fracking proposals, including one that has just been put forward by Buru for 32 fracks in the Kimberley, which are not going to be subject to environmental impact assessment. There is no disclosure publicly of what those kinds of risks are going to be and no proper assessment of those, and they are going to be subject to a regulatory framework that is the unimproved regulatory framework. The new improvements will take a long time to go through the system, and I think it is extremely unlikely that they will retrospectively be applied to existing fracking operations.

Hon STEPHEN DAWSON: Mr Verstegen, you have spoken about myths, and I want to raise something that I have heard in relation to the Conservation Council and, I guess, your concern with fracking. The Conservation Council is on the record as being against development in the Kimberley and, indeed, the industrialisation of the Kimberley, and you actively campaigned against the Browse project. Is it because you are against development of the Kimberley that you are actually against fracking?

Mr Verstegen: Thank you for the question. No, that is not the reason why we are against fracking. We are against certain types of industrialisation of the Kimberley—the types of industrialisation

that would have significant, ongoing and irreversible impacts on communities, groundwater and the environment. Gas fracking is certainly included in that mix. We are also opposed to gas fracking in any other place that it could occur in Western Australia, so we are talking about the midwest, we are talking about the North Perth basin where there is agriculture and farmland, and we are talking about the area around Carnarvon as well. So it is not something that is isolated to the Kimberley by any means.

Hon STEPHEN DAWSON: Is there any way the Conservation Council would support fracking or gas fracking in this state with any set of regulations or limitations, or plainly and simply are you totally against it?

Mr Verstegen: At this point we are unconvinced that this industry is capable of being developed in a way that has environmental impacts managed to an acceptable level. Even if you can set up a regulatory framework and somehow come up with technologies that are going to avoid the problems that we have seen with groundwater contamination, there are other issues that are simply unavoidable associated with gas fracking. One of them is the very significant surface impact on land, and I am happy to table some aerial photographs. You have probably seen them yourselves. You only have to look at Google Earth at some of the gas fracking areas in the US and other places to see the astounding environmental impact on the surface of the land. The other issue that I cannot see being managed in any way is the carbon pollution arising from not just the fracking activity itself, the bringing of the gas to the surface, the fugitive methane emissions, but then the burning of that gas. The World Bank is saying that we need to keep 80 per cent of our fossil fuels in the ground to avoid catastrophic climate change. There is a global movement to divest from fossil fuel industries by ethical institutions and organisations. We simply have a carbon bubble and a fossil fuel bubble that we need to be moving away from as an economy, and that is an impact that I do not think we can avoid if we are going to pursue these types of developments.

Hon STEPHEN DAWSON: I just wanted to ask: in relation to the Department of Mines and Petroleum, do they actively engage with the Conservation Council in relation to gas fracking policy or the regulatory framework at all?

Mr Verstegen: Yes they do, and we have got quite open engagement with the Department of Mines and Petroleum. I provide the same sort of advice directly to them that I am providing to you here, and in many respects—I give them their dues—they have tried to acknowledge some of those concerns and tried to come up with some improvements to the regulatory framework. So, yes, certainly we have been engaging on that basis, and I actually thank the agency for their openness to do that. Notwithstanding that, some of the issues that I have been talking about are structural issues; they are not going to go away no matter how open and consultative that department is.

Hon STEPHEN DAWSON: One of the big concerns you have relates to well failure around the world in relation to fracking. Have we seen examples of well failure in Western Australia that we know about?

Mr Verstegen: Yes, we have. There was a leaking well—I believe it was the Corrybus well that was leaking. I believe that that has been stopped already. So, you know, that is an example of well failure that has been identified and fixed. Nevertheless, it is an example of well failure.

Hon STEPHEN DAWSON: Just for the record, how do you spell the name of that well so we can investigate it further?

Mr Verstegen: I believe it is C-o-r-r-y-b-u-s.

Hon STEPHEN DAWSON: And do you know whose project it was?

Mr Verstegen: I do not, but I can follow up with those details.

Hon STEPHEN DAWSON: Okay.

Hon SAMANTHA ROWE: If I could just ask some questions, I suppose following on a little bit from what Stephen Dawson has also said. If gas fracking is to go ahead and continue in Western Australia, what would be some of the risk mitigation plans that you would like to see in place?

Mr Verstegen: As I said, I do not think that we are particularly convinced that there are any kinds of mitigation plans that would manage the risks to adequate levels, but, at an absolute minimum, what we would be expecting is, number one, baseline monitoring and testing of these areas both in terms of the water quality and the air quality so that there is actually a baseline that can be referred to if and when pollution incidents occur. I do not believe that that is necessarily occurring. One of the issues here is methane escape into the atmosphere from uncontrolled sources through the ground, through aquifers and from fugitive emissions from pipelines and wellheads themselves. There have been some examples of ambient monitoring of methane in gas fracking fields on the east coast in coal seam gas and some in the US as well that have shown very elevated levels of methane. The response from industry has been, "Well, we think that this is naturally occurring elevated methane, so, you know, you can't say that it's due to the gas fracking." So we need to be getting that baseline data in relation to methane, in relation to water quality and in relation to air quality issues.

The other thing is that we actually need an agency that is prepared to actually set some tolerance levels for what kind of environmental impact is going to be acceptable. We do not have that. Now, we would be arguing for saying that there should not be any contamination acceptable in groundwater. My understanding is that the Department of Health set groundwater acceptable limits for contamination, but they only have those acceptable limits for groundwater drinking areas, and they do not apply to other areas of groundwater, even though they might be used for stock watering or for local communities or for Aboriginal communities indeed. So we need some standards to be applied to groundwater and air pollution that actually find their way into the regulations, rather than a disjunct between standards that might be set at a national level or an international level. So they are some pretty basic things that we would like to see. Then, as I mentioned before, we would like to see that there are effective make-good provisions, so the industry is actually held accountable for pollution incidents. Part of that may be the application of environmental bonds. This industry at the moment, unlike the mining industry, is not required to have environmental bonds. They do have private insurance instead of environmental bonds. We do not believe that that insurance actually covers the kinds of things that environmental bonds are intended to do. It might cover costs directly incurred by the proponent itself if there is a well incident, but impacts on the environment that might be caused that are broader than that off the well site, whether it is spread of dieback into our protected areas, whether it is groundwater contamination, whether it is air pollution impacts on communities—health impacts—we do not believe that that insurance is capable of covering those kinds of impacts.

Hon SAMANTHA ROWE: Do you believe that more research is required to be undertaken here in WA so that we can better understand the risks associated with fracking?

[11.15 am]

Mr Verstegen: The basic call for our moratorium on gas fracking is that we need to do significant research. We do not have baseline research into what our groundwater aquifers look like, whether they are connected together, what the fault systems are or what the likely impacts and risks are of well failure. All of those kinds of things would normally be assessed in detail by the Environmental Protection Authority if it was going to do an environmental impact assessment process; that process has not occurred. Some 18 months ago or a year ago, the Environmental Protection Authority indicated to us and other stakeholders that they would like to see a strategic assessment done so that instead of looking at each individual proponent, which may be a small number of wells, they needed to actually examine the cumulative impact. One of the problems with our current environmental impact assessment process is that they cannot actually effectively look at the cumulative impact

because they have to assess the proposal put before them, and that might be four wells, that might be 10 wells or that might be 100 wells. They cannot then take that and say, "We have a concern here because there could be 1 000 wells or 10 000 wells and we need to do a cumulative impact assessment. So they put on record that that was their preference for that to occur and that industry and government should get together to do that. We are not aware of any activity that has occurred yet by government to proceed down that pathway, so we are likely to see, if indeed the EPA does start to assess these proposals, that it will be assessed on an incremental basis that will not capture a lot of these kinds of impacts on our environment and human health that will occur because of the cumulative impacts of activities like gas fracking.

Hon PAUL BROWN: In relation to one of the technologies currently being used by the industry—the 3D seismic survey—how do you view the 3D seismic survey in relation to the industry being able to provide a much more modern and sophisticated way to identify fractures to below-the-earth groundwater systems to be able to be avoided, and therefore provide a safer fracking system?

Mr Verstegen: I think 3D seismic survey is part of the suite of technologies and tools that we would expect to be deployed in relation to understanding our geology and understanding the likely impacts of any fracking activity. Having said that, 3D seismic surveying can have some very, very significant impacts on our environment and I would like to table some images of recent 3D seismic surveying that has been undertaken in the Kimberley, where gridlines have been bulldozed across the landscape. They are not going to go away any time soon; there will be scars across that landscape for possibly hundreds of years. They are pathways for the spread of dieback, they are pathways for feral animals and predators to get in our ecosystems, and indeed there is a proposal for 3D seismic surveying to be undertaken in Beekeepers Nature Reserve—one of our most biodiverse areas in Western Australia in the north Perth Basin. So that is a nature reserve where they want to undertake 3D seismic surveying. I understand there is a lower impact way of doing 3D seismic survey that does not require the bulldozing of those gridlines; however, I do not think that that is what is being proposed. It may be that it costs more to do it in that fashion.

Hon PAUL BROWN: The instances in the United States that you alluded to earlier in your statement and the fracturing in those circumstances, were they using the modern types of technology such as 3D seismic survey to identify risk areas or were they not using that?

Mr Verstegen: Let us be clear: 3D seismic surveying could help identify fault systems. What we are talking about is the possibility of a fault going several kilometres down to the target formation and the fault then acting as a pathway for contamination to the surface or into the groundwater. What we saw in the United States may have been associated with that kind of fault system, but that is really extremely unlikely. We are talking about kilometres of distance through rock that would have to migrate. The professors I have spoken to who have been studying this said that the likely contamination sources and pathways are the wells themselves; they start to corrode and the cement starts to crack. The wells are drilled down vertically and then around a corner to go horizontally, and they have problems sealing the casings at that point where they go round the bends. You have technology in relation to the cement products and the steel casings being used that is corroding and fracturing and becoming pathways to contamination. So, 3D seismic surveying is really not going to help us manage those kinds of risks; nevertheless, if there are pathways to migration through fault systems, perhaps they can be identified through seismic surveying.

Hon PAUL BROWN: I will refer to some claims in your submission to the committee that in the midwest region, for instance, they might well see over 25 000 wells, assuming a field size of 21 trillion cubic feet, and also in the Kimberley they might see upwards of 100 000 wells. Being that the industry is in its infancy and they are suggesting there is going to be a very slow uptake of this type of technology and fracking throughout the state—if in fact it does proceed beyond its infancy—what time frame do you suggest, if that is the reality? We are not going to see that in the

next couple of years. What time frame are you suggesting we will see 100 000 wells dotted over the Kimberley and 25 000 wells dotted over the midwest region?

Mr Verstegen: Thanks for the question; it is a big question and it is one that I think is quite difficult to answer. The figures—they have been questioned by the regulators and also the proponents when we have quoted those figures in public—are simply based on the kind of well density we have seen in other areas where shale gas fracking has occurred and the size of the resource in terms of the amount of gas that is there. It could be quite different; it could be out by in the order of 50 per cent or it could be more than that, but it is simply an estimate. In terms of the speed of development, well infrastructure is the main barrier to development, and no doubt you will hear a lot from industry about how they would like government to assist with developing that kind of infrastructure. We are talking about pipelines to connect gas fracking fields to either the domestic market or facilities where that can be processed and exported. These are going to be quite expensive in the Kimberley, and of course the Kimberley has a range of other logistical and legislative and procedural challenges. Having said that, the speed of development that we have seen in some of the shale gas fracking fields in Texas and other parts of America is that as the resource starts to be developed, the development occurs very, very quickly. So we might see an onset of significant development delayed in Western Australia in the Kimberley by five years or we might see it delayed by 10 years and gas prices are probably going to change in that time, so really there is a lot of speculation involved here. But our concern is that when we see a development, and it could be for the Kimberley as close as five years and for the midwest much closer than that given that there is the infrastructure already there—the Dampier to Bunbury natural gas pipeline—we are concerned that we will see a very, very rapid expansion of thousands of gas wells being drilled. People have said, "Well, there's only one gas drilling rig here in Western Australia so it's going to take an awful long time." I think that is a bit spurious because we do have ways of getting drilling rigs from places like the United States, which has hundreds if not thousands of them at the moment. I think the likelihood is that we could see development occurring very quickly. When that starts, I say it is an open matter and there is a whole range of different issues that will be pending on that.

Hon PAUL BROWN: Just following on from that claim for the amount of wells dotted throughout the environment, certainly in the US they have individual drill sites as opposed to what they call a multidrill site pad where you can have up to I think between six and 12 fractured drill sites on the one pad using directional drilling, which obviously would far reduce the amount of impact that the industry will have. In fact, I think looking at the APPEA submission, they are suggesting you might only have one pad every four kilometres. The scenario you are suggesting is that there is going to be serial drill holes all dotted around, or are you saying there are going to be many multiple drill holes and multiple pads as well?

Mr Verstegen: The scenario we are suggesting is based on the kind of technology that is being rolled out right now in the United States. It may be that technology is going to develop to the point that APPEA is mentioning there, but certainly that is not the type of technology that is being used at the moment. The technology that is being used at the moment is multiple fracks per well. It is a lateral drilling from those wells, so you do have this phenomenon where you drill a single well and then multiple laterals from that; indeed, that is what is proposed at the moment by Buru in the Kimberley with their exploration wells. However, that is still leading to a proliferation of thousands of wells across the landscape; it just means they can frack more rock from each well, it does not necessarily mean they need significantly less wells. That has been the experience so far to date with the industry expansion as we have seen it in other parts of the world.

Hon STEPHEN DAWSON: Mr Verstegen, in your opening statement and indeed your submission to the committee you gave us figures where you said six to seven per cent of new wells drilled in Pennsylvania have been compromised because of well failure. Is that the case everywhere? Are those figures consistent everywhere or is that simply Pennsylvania that has had a significant number

of failures. Where is it happening in other places in America or around the world are we having similar rates?

Mr Verstegen: I think part of the problem is that we have not had effective regulatory frameworks in place in a lot of these places to really know what the well failure rates have been, and there really is a paucity of data and research into this. The data that that is referring to is a paper I have here from Anthony Ingraffea, who is maligned by the gas fracking industry as being an activist while he has published many, many peer review papers in journals of engineering. He is based in the number one rated university for engineering in the United States, so I think I would place a little more credibility in his peer reviewed published papers than the claims of a gas fracking lobbyist. But that is the data we have to work with, and I have seen examples of this with my own eyes. At the farm I visited and several others, every second well I saw had methane bubbling up from around it, so I can only imagine that those estimates of well failure in the first year are accurate. What we definitely do not know is what is going to happen in the future when these wells are abandoned or 100, 200 or maybe even 500 years. You would like to think that gas development will take all the gas out of the ground, leaving nothing there, and therefore there will be no risk of gas contamination of groundwater through well failure and well casing failure. That is not what happens. What happens is that after the flow rate slows down to a point where it is no longer economically viable, they will cap that well, but that means there is still gas there and over a period of time it builds up to very, very high pressures in those wells. So we could see abandoned wells, and this is the open question in relation to gas fracking that has occurred in the United States and elsewhere: What is going to happen over those sorts of time frames? Who is going to be responsible for those methane emissions? Will that come back to government in terms of holding that responsibility for even measuring and counting them? They are the kinds open questions that have not been answered by anybody.

The CHAIRMAN: Hon Brian Ellis has been on urgent parliamentary business in another room, I believe.

Hon BRIAN ELLIS: I do apologise.

The CHAIRMAN: Mr Verstegen, I think we have made good use of the time; we started a bit late, but we have run a bit late. I think we have had a very good exchange of information, and I thank you for that. I note that you will be providing, by supplementary information, a quantity of clippings and articles that we have already referred to. You will also be providing some images of bulldozed gridlines and so on that you mentioned in your remarks. Possibly you might also be providing, by supplementary information—we will leave it up to you—your description of your journey to North America and what you observed there. Of course, we would be pleased to receive any other material that you wanted to provide at a later date in relation to our ongoing inquiry. But for now I think we had better draw our hearing to a close, and I thank you very much and bid you a good day.

Hearing concluded at 11.29 am