



## ***Darwin - Santos***

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**6 February 2018**

**Darwin Convention Centre, Darwin**

**Speaker: Tracey Winters, Geoff Atherton, Che Cockatoo-Collins and Tom Baddeley**

Tracey Winters: Madame Chair, my name is Tracy Winters. I'm appearing on behalf of Santos. I'm joined by my colleagues, Geoff Atherton, who's the general manager of the drilling and completions, Che Cockatoo-Collins, who leads our engagement with Aboriginal people, and Tom Baddeley, who manages Santos's public affairs in the Northern Territory.

Hon. Justice Pepper: Thank you. You've got a lovely soft voice. If you can just keep it up, please, or move closer to the microphone, I'd appreciate it. Whenever you're ready, thank you.

Tracey Winters: Okay. First, Madame Chair, I want to apologise for keeping the panel waiting a few minutes this morning, and thank you for the opportunity to appear before the inquiry. Before I begin, I would like to acknowledge the Larrakia people, the traditional owners of the land upon which we meet today. On behalf of Santos, I also extend our appreciation for the thorough and inclusive manner in which the panel has conducted this inquiry. As stated in our most recent submission, Santos welcomes the inquiry panel's conclusion in its draft final report, that the risk associated with the development of an onshore shale gas industry can be minimised to acceptable levels, and in some cases, eliminated altogether. Santos has already, safely and without environmental harm, hydraulically stimulated over 1400 wells in South Australia, Queensland, and the Northern Territory, involving more than 4,400 individual hydraulic stimulation stages.

We are an Australian company with a long and successful history of natural gas exploration, development, and production in our country, and a positive track record of protecting the environment and working alongside local communities and landholders in a fair, open, and cooperative manner. We hope we can continue to do that in the Northern Territory, because not only do we think a shale gas industry would be a great opportunity for Santos, we have seen the positive transformation of Queensland rural communities in the Surat Basin over the last eight years, where local landholders, townspeople, and communities have benefited from higher incomes, more jobs and small business opportunities, better education, community, and health services, and improved transport, and also tourism infrastructure. We think that kind of economic and social boost could occur in the Northern Territory, and with a robust regulatory regime like that in Queensland, the



industry could be developed in a way that protects the environment and health and amenity, as has occurred in that state.

Over the last two years in our Roma area gas fields, Santos paid more than 140 million dollars to local post codes, in wages and to small businesses, and this was a period when our activity levels were lower than earlier in the decade. At the end of this month, we will commence a drilling program worth around 750 million dollars over the coming three years, and this new investment will again provide a significant boost for Roma and surrounding areas. Last year alone, local landholders were paid 12.5 million dollars in annual compensation payments. We also pay 2 million dollars a year in rates to the local council, which is about 10% of their total rates base.

The benefits of our Queensland QGLNG project have extended to the state and the nation. Since 2011, well over 10,000 people have worked on the Santos GLNG project. We purchased materials and services totaling more than 9 billion dollars in Queensland alone, with about 1.5 billion of this going to original Queensland businesses, and we spent 210 million dollars to upgrade rural roads in regional Queensland. Santos alone spends more than 100,000 dollars a year on local community sponsorships in Roma and Gladstone, with our joint venture partners also contributing to the community. We think many of our investments in Roma have really made a difference to the quality of life for the community. For example, 2.5 million dollars in 2011 to upgrade and expand the Roma Airport, 20 million dollars over the life of the project to support the CareFlight aero-medical service, a million dollars to Roma Allied Health, 5.5 million dollars for affordable housing and rent assistance initiatives in the Maranoa council area, a million dollars for significant upgrades to Roma's underground sewage infrastructure, and more than a million dollars for weed and pest management programs, including a significant upgrade to the Roma Sale yards vehicle wash down.

I refer to the panel's economic modelling, which suggests that tangible economic advantages will flow to the Northern Territory if this industry is permitted to proceed. We couldn't agree more. The panel's modelling, by its own account, is conservative and doesn't take into account liquids, like condensate, propane, and butane. Should a liquids rich development occur, the overall project economics will be significantly more positive, and the value of the shale gas industry to the Northern Territory will be significantly larger. Further, the modelling didn't account for the impact of potential LNG expansion, or the potential for new local downstream developments like fertiliser or petrochemical plants based on large-scale domestic gas supply, so it's worth noting that in the United States, shale gas development has transformed the economy, creating not only jobs and local opportunities, but stimulating manufacturing industry through lower gas prices, lowering the overall carbon footprint, and turning America from an energy importer to an exporter, one well placed, according to the latest monthly report from the International Energy Agency, to overtake Saudi Arabia and Russia as the world's leading energy producer over the next 12 months.



We have much to learn about the true potential of the shale resource in the Northern Territory, but we hope it can one day be a powerhouse of the Australian economy, at the same time retaining the territory's unique environmental, cultural, and social assets and characteristics. This is an industry in its infancy, and at this early stage, it is still uncertain whether development of shale gas in the NT will ultimately be economically feasible. There is a lot of data to be acquired in the exploration and appraisal phases to fully understand the opportunity.

Therefore, if the moratorium is lifted, it is vitally important that small-scale exploration and appraisal activities be allowed to continue, in order to acquire the baseline geological and environmental data that will inform both a thorough assessment of the resource, as well as operational and environmental risks, and how they can be best mitigated or removed. Regulatory changes flowing from the Hunter and Hawke reviews mean there are now better protections in place to ensure the resumption of these small-scale activities can be environmentally safe. In summary, we believe exploration and appraisal could safely continue, while the regulatory reforms proposed by the inquiry panel for the large-scale development and production phases are progressed in parallel.

Returning to the issues raised in the draft final report, the panel made clear from its consultations that the major concern of all communities was the contamination of water resources, both from operating and abandoned wells. We welcome the panel's finding, supported by a CSIRO review, that there is a low risk of well integrity issues in the Northern Territory geological setting, where the well has been properly constructed and tested prior, during, and after hydraulic fracturing, and where it has been properly decommissioned and monitored. This is a very important finding to those people with a genuine concern about water contamination risk of hydraulic fracturing. Of course, proper regulation is critical, and Santos supports the objectives of the panel's recommendations in this regard. In closing, Santos supports a robust regulatory regime and welcomes the inquiry's support for objectives-based governance, which will be critical to the timely and economic development of a safe and sustainable shale gas industry in the Northern Territory. Thank you, Madame Chair.

Hon. Justice Pepper: Thank you. You have an hour, so ...

Tracey Winters: Okay. We're happy to take questions.

Hon. Justice Pepper: All right. Well, I presume that you've been to places like Larrimah, Daly Waters, Elliott. If the government lifts the moratorium, what will Santos do to create long-term local jobs in those communities, not just FIFO?

Tracey Winters: Madame Chair, I think those are the sorts of things which, as was the case in Queensland, would be worked out in consultation with local communities and local councils. It may be that there are community consultative committees, which we have for both our Narrabri project in New South Wales, and which we have for all of our operations in Queensland, so I think those kinds of things are things to be developed in consultations. Certainly,



they are things that we have worked on with the communities in other projects.

Hon. Justice Pepper: Can you, in that case then, give me some examples, please? Because everywhere we go, quite understandably, people say, "Well, what is this going to do for us? Realistically, what is this going to do for us? Mining companies have come and gone, and nothing has happened. There's no local jobs, there's no training, and we've been left with a mess." Based on what Santos has done elsewhere, can you give me some types of examples, hypothetical or otherwise, of the types of programs that you would be looking to implement?

Tracey Winters: Okay. Madame Chair, I can really only point to the numbers that I've provided in the opening statement, but in terms of specific policy programs, we're happy to take that on notice.

Hon. Justice Pepper: All right.

Tracey Winters: But certainly, the work that we've done in Queensland indicates that we have made a significant difference in the communities, and I think we have a great deal of support in those communities.

Hon. Justice Pepper: But, well, with great respect, that's not of you that we were told universally when we visited those communities during our trip to Queensland. We heard many stories of many people who'd had very bad experience with the gas companies up there, and in particular, Santos.

Tracey Winters: Madame Chair, we'd be very concerned about those, so I'm happy to look at any of those individually and look into them, but certainly, we're aware of many very positive stories, and our view, based on the work that we've done over the years, would be that the vast majority of people have supported the industry and continue to support us being there. Can I just ask Che, who has a comment to make?

Che Cockatoo-Collins: To address a specific initiative that's happened around the Roma, Maranoa Region, Santos and most other companies will have a rotating workforce, older people retiring, other people just by attrition, leaving to other occupations. In Roma, Santos is engaged with the local TAFE, which is attached to the local high school, and through that process, Santos has 12, it changes year to year, based on what we are able to accommodate for, but apprenticeship programs specifically with Santos in our fields at Fairview, Injune, Springwater, and one in Biloela.

What happens is we engage with the local school and the TAFE to do modules, so that those boys and girls sometimes, or most of the times, it's of a mechanical discipline. Others, they may want to do accounting. We cannot accommodate for a lot of those, what we would call non-traditional field roles, but the reason why we do that is because we require local people working in the local area, and it's not just smart for business. Economically, it's smart for us, because it costs an enormous amount, money that we don't want to spend, to fly people in and out of the region. I understand that



in the early days, when we have specific work programs with highly trained professionals that we do need, there has to be some give in respect to that early stage of exploration, but once construction and operational phase is in place, that's where ideally, you want local people working in your local area.

Hon. Justice Pepper: I accept that the conditions, obviously, in Queensland, the context in Queensland is very different from, for example, Elliott. I'm just picking a random example, so again, I think you surely must have started to turn your mind to some of what this might look like now, if the government lifts the moratorium. Again, people want to know. They want to know what sort of benefits, what sort of employment benefits, particularly in Aboriginal communities, will be created in those communities.

Che Cockatoo-Collins: In the early stages, and we have engaged with local, as best we can, Aboriginal-owned businesses and businesses that do pride themselves on Aboriginal participation in their workforce. I think that's a gauge of where we are. We're a fair way from even construction phase, but we certainly ... What we've done in late last year was engage ourselves with the Northern Territory Indigenous Business Network, which has allowed us to understand more broadly the people and businesses that exist in the Territory. I think what would be required is further down the track, if the moratorium was to be lifted, then that will signal a change in understanding what resources may well be in places like Elliott, Newcastle Waters schools. Obviously, you need a school able to deliver modules, TAFEs, those types of areas, local businesses. I don't think there are any in Daly Waters that are able to [crosstalk]

Hon. Justice Pepper: Have you guys been to these communities?

Che Cockatoo-Collins: Yes.

Hon. Justice Pepper: You have? Have the rest of you been to these communities?

Geoff Atherton: But we have actually ... If you break it down to the phases, for phase one, so to be quite honest with you, we have not looked at the development and construction and all that type of stuff at all, really. In phase one, exploration and appraisal drilling we have actually mapped out what is specialist and needs to come from interstate or overseas, like big drilling rigs, frack spreads, specialist tools, things like that, and what services we can take locally. That's already been mapped, and we actually already have a procurement plan in place, and some of the work that Che's talked about, some of the preliminary work on things like logistics, security, all that type of stuff that we have consciously a procurement plan sourcing that stuff locally.

We have done some work with some local groups to highlight who can and can't do the work, and we were starting doing the qualifications and assessments and all that stuff, and then we've basically frozen the project for the last six months, so that stuff hasn't progressed at all since we've been in the current state, but we definitely have a plan in place for phase one of the next two years of exploration and appraisal.



If we look back at Queensland, the early, early days, go back eight years, and we were in a very similar situation. Back then, we basically highlighted, "This is what we can get locally. Welding, logistics, blah blah blah blah." But we also at the time said, "We need to build some local drilling capability." So we partnered up with a local Roma drilling company, and we put a joint venture together, financed 50% of the building. In fact, we financed the original purchase of the rigs, 50% ownership, and we have built that company to be a reasonable size drilling and oil organisation, so that we would have that local entity available from the Roma area.

Now, that may or may not happen, but that's the type of thing that we did. Turn the clock back eight years, that is exactly what we did with local communities in Roma at the time. I think in this case, we've got to get through the first phase. I don't think anybody's going to be promoting spending 50 million dollars on buying drilling rigs [crosstalk]

Hon. Justice Pepper: That's accepted. That is accepted.

Geoff Atherton: [crosstalk] may or may not move in through development. That would be a disaster for everybody, but definitely the local stuff is mapped out in services that if we don't proceed into development, it's not going to cause a catastrophe because people have bought all the trucks and equipment and earthmoving gear and all that type of stuff.

Che Cockatoo-Collins: I think one of the great lessons learned by our company, and particularly in the Maranoa region, is when obviously there's a certain population amount, and when the industry was at its peak, what we found or what local companies found was their talent was being drained, and the Maranoa region council and local business gave us a pretty good whack over the head to remind us, "Well, hold on, this is what's happening here." As a result, what we did was not just subsidise; we paid for younger people in, again, what we'd call non-traditional roles, hairdressing, IT, even a mechanical apprenticeship at Black Toyota. These are the things that were required by the company to when we thought we had a social licence. You've got to maintain that social licence by understanding the evolving effect of your business on the local community, so there examples.

Hon. Justice Pepper: What would be great is, and the same request was made from Imperial and Origin yesterday, is that we would like some details and further meat on the bone in this respect. Now, whether that's drawn from the experiences in Queensland, South Australia, wherever that may be, but we've had a lot of high level statements from many people, this is not necessarily just directed to you, about the potential for jobs, and the potential for local jobs, and long-lasting jobs, and training and so on, but we've had no details, and we are really quite desperate for the details. You can understand, so many people who have come before us in consultations, this was stated in the interim report and it was stated in the executive summary, who have said they don't want this, they do not want fracking in the Northern Territory. They don't believe it's going to bring any benefits, particularly when having regard to the risks, so we would like to start seeing some examples of potential benefits.



- Tracey Winters: Thank you, Madam Chair. We will provide that to you based on the Queensland experience, where we have a lot of information, so we can do that for you.
- Hon. Justice Pepper: All right then, but presumably there must be some experiences in South Australia as well. South Australia, I would have thought, is going to be perhaps more geographically and potentially culturally analogous to some of the areas where this industry may develop in the Northern Territory.
- Tracey Winters: We can do that. I think South Australia, as you say, like the Northern Territory, there haven't been a lot of regional communities developed around the project, by virtue of the land use in the area, but the state as a whole has certainly benefited, and in particular, Adelaide, as the capital of the state. Of course, to the extent that we have community interactions in the Cooper Basin, we can provide details of how they have worked over the years and what we do in that region.
- Hon. Justice Pepper: Thank you. Yes, [crosstalk]
- Prof. Barry Hart: Could I just ...
- Hon. Justice Pepper: Professor Hart apparently has a question.
- Prof. Barry Hart: No, just a follow-on, Geoff, from your comments. When you're putting together the information, you cite situations that occurred in Queensland. We know about those, but Queensland, in terms of some of the size of the communities there, Roma, et cetera, very, very different to the Beetaloo area that we're talking about, Daly Waters, Elliott and so forth. Could you factor that in? To some extent, you just touched on that a little bit with the South Australian experience. I see it as quite different, in terms of stimulating the local communities, so if you could address that, that would be great.
- Hon. Justice Pepper: Do you have another question?
- Prof. Barry Hart: Oh, yeah, plenty. While I'm going, a number of times here, you've asked us, I think, to soften some of the prescriptive recommendations, or what you have called prescriptive, to risk an object-based or objectively-based. What's your objection to prescriptive recommendations, given that a very large number of community don't trust companies, with all due respect, or the government, and they would see objective-based recommendations as allowing the company to use their skills, their wiles, to 'manipulate' governments? Why not prescriptive?
- Tracey Winters: In large part, I think that the panel has covered some of those issues. For example, yesterday there was some discussion about category 9 wells, and we had noted that the panel had recommended or an equivalent standard, so in those kinds of cases, we understand, we fully appreciate that position. I think in some recommendations, in the report, it refers to continuous real-time monitoring being available for a very wide range of parameters. Now, in Queensland, if I use Queensland as an example, for example, there are



hundreds of, if not thousands of water monitoring wells from which data is collected. The groundwater moves very, very slowly, so there is no immediate impact, whereas if I use an industrial example of an ammonia release from a petrochemical plant, it could have a very, very rapid impact on human health, and so quality monitoring in circumstances like that on a real-time basis is a good thing to have.

It's a very literal example, not a practical one, but in terms of real-time monitoring of thousands of water wells, for example, that may not necessarily be practical, or economic, or deliver any meaningful data to the people looking at that continuous on-time real-time monitoring. For that example, we would prefer something along the lines of the process that the commonwealth has for water monitoring and management plans, where the companies submit the data every couple of years, I think it is, but it could be a shorter period of time, and in which they provide very detailed hydro-geological analysis and interpretation of those results. Now, I think that that kind of program would be more meaningful than real-time online data being available on water wells, particularly where the impacts occur over very, very long periods of time.

Hon. Justice Pepper: [crosstalk] Or both. You could have both.

Tracey Winters: You could, but I think that ... It's yet to be determined, but I think the costs would be very prohibitive, and the technology is also not great to do that at the moment.

Hon. Justice Pepper: You could provide us with some information on cost and the limited efficacy of the technology.

Tracey Winters: Yes, we can do that.

Hon. Justice Pepper: Again, there is again, and I'm basing this comment on what people have told us in the community consultations, again and again, there's an absolute lack of trust, absolute lack of trust with respect to your ability to regulate yourselves and the government's ability to regulate you, and many of the recommendations, as would be apparent, are designed to protect the environment and also to engender trust. By stripping some of those away, you get back to the position where you're currently at. If there are cogent evidence-based reasons why the recommendations are not good recommendations or can be improved, we would like to have that, but again, high generality motherhood stuff, as contained in some of the written documentations come before us, is just not helpful to us.

Prof. Barry Hart: Could I just continue on with a couple of questions?

Hon. Justice Pepper: This is the danger of allowing yourself 50 minutes to be questioned by a panel, I might add. [crosstalk] No, that's all right. That's all right.

Prof. Barry Hart: We have got a lot of time. [crosstalk] Yeah, a couple of questions on the water management section of your submission. The first para, which you agree with the requirement or our recommendation regarding extraction





licences and paying for it, but you also mention there, as did Origin, that all water uses should be in that. I just want to remind you, as we reminded Origin, that that's not within our terms of reference, our terms of reference specifically to shale gas industry, so it'll be up to the government as to what additional they do.

Hon. Justice Pepper: Thanks, Barry.

Prof. Barry Hart: The second paragraph, with regard to the EPBC water trigger for shale gas. You mentioned there that ... Well, you say that it's not needed, it's covered by other regulations and certainly some of our recommendations, but you cite as the example what's going on in the coal mining and coal seam gas industries are very different, and that was the reason for the water trigger, but could I ask you what's so different? Fair enough in terms of coal, but coal seam gas, why is that so different? They still use water, and the groundwater component of the water trigger of the EPBC Act is what it's all about, so what's different? Why would shale industry not be needed?

Tracey Winters: Professor Hart, I think the big difference is the volumes of produced water that occur with coal seam gas production. The difference is that water is used for the actual hydraulic stimulation process, but there is very little water extracted from the shale gas reservoir, if you like, because the shale is a very non-porous rock or rock formation. I think that's the big difference, and perhaps Geoff would like to say some more about that.

Prof. Barry Hart: Just before you do, yes, I realise all of that, but the water trigger is very largely about groundwater use, not how much water comes up from the coal seam gas deposit or the shale. I just don't see why you've got a concern about that. It's very similar in terms of the amount of water. Okay, coal seam might be able to reuse more, but the EPBC trigger is about knowing much more about the groundwater resource.

Tracey Winters: We accept that, Professor Hart. The difference we were referring to was, as I said, that the water usage that was of concern in Queensland was about the produced water, rather than water usage, whereas we will not be extracting groundwater in the context of produced water from the reservoir. That's the difference we're referring to.

Hon. Justice Pepper: But you would accept ... I think you would have to accept, wouldn't you, that if you have a trigger that's designed to protect the groundwater use, there would be no sound reason why that ought not apply to shale.

Tracey Winters: Madame Chair, it could. It's just an issue that we raised in the submission, but it's not a show stopper for us.

Hon. Justice Pepper: Okay.

Prof. Barry Hart: Okay. Could I go onto the third para, which is related to our recommendation of prohibition of using surface water? Got it. You note there that we've identified the risk of too much surface water being uses as low, but I want to remind, and you went on to say a blanket ban's not good.



The reason we ended up with a final risk assessment of low was because the mitigation that we recommended be put in place is, don't use it. It was a prohibition, so the risk for surface water resource use is much higher than low if it's not banned, so perhaps you should read that again. That's a qualification.

Tracey Winters: All right, thank you.

Prof. Barry Hart: That's the mitigated risk that we're talking about there, and a number of people have, I think, quoted us as recommending certain things, and not really looked at the process that we've gone through, which is looking at consequences, likelihoods, risk, mitigation, what's the end residual risk.

Hon. Justice Pepper: No, that's a good point that Professor Hart makes. In fact, almost universally, when we have been quoted by various people, including the media, as having come up with a particular risk assessment, they have failed to omit that it is the mitigated risk assessment. Any further questions? Yes, Dr. Jones.

Dr. David Jones: Yes. Well, one of the issues, which has, I guess, come up more prominently, in fact, in these consultations, is this issue of potential liquids being produced as part of the gas stream. Up to this point, we were largely concerned with gas, and the gas that came out of the Amungee well for example, is dry gas, but now this issue of co-produced condensate and so on seems to be coming up, and indeed, as you quite rightly say, if condensate is produced, it changes the economics, so what's your take on this in terms of your leases and so on? What's your view on this?

Tracey Winters: Doctor Jones, at the moment, the well that we've drilled, as far as we know, the gas is very dry. The point that we were making was just in relation to the potential of these kinds of resources, and sometimes they may contain propane, butane condensate, like the Cooper Basin does, but so far the gas that's been produced is very dry gas.

Dr. David Jones: Okay. Well, I guess my point was not so much the propane and the butane, but more towards the higher hydrocarbon condensates, more like the oil in the US, for example. That oil production is driving the gas industry in many cases. Do you conceive that this could be the case in the NT, or is this left field?

Geoff Atherton: I think we need to drill some more wells. There's only been a very, very small lot, three wells drilled in shale and only one tested, so we've got a huge area to explore.

Dr. David Jones: We understand the Kyalla formation might be more prospective in that context, but that hasn't been explored so much.

Geoff Atherton: Maybe. We haven't flowed anything to date, so ...

Dr. David Jones: In the risk assessment we've done, particularly in our water chapter, we've implicitly stated that our risk assessment is based on a dry gas scenario, so



we've been quite implicit about that, which is quite important to know. Just taking up a bit more of the, if you like, the monitoring thing, I have been involved with the development of continuous monitoring systems, and I'm very much aware of the technical issues and the issues of real-time quality reporting. I certainly do take that on board from my own practical experience, but on the other hand, as Justice Pepper has said, the community has a really strong perception that the monitoring will be carried out 'regularly.' I use regularly in inverted commas, and reported openly, transparently on a regular basis, I think to say two years in arrears would not go down particularly well.

Tracey Winters: Dr. Jones, we accept that as well, and we absolutely agree that the reporting has to be open, transparent, and regular. I was referring to a regime in Queensland. It could be much more regular reporting in the Northern Territory. It doesn't have to be two years.

Dr. David Jones: Well, the other thing is your reference to reporting all analytes at once. I agree that's an impossibility, but there are certain key things like electrical conductivity, which is a very robust measure of particularly excursions from wells and things like that close in, which I think you should really consider, particularly at the time of when the system is under most stress, like hydraulic fracturing and things like that pick up, any excursions that might be occurring, just to provide that backup. The other thing is you made reference to very long travel times. Now, the devil is in the detail here, because if you're relying on an existing water bore that's a kilometre away in the Beetaloo Basin, for example, it could take decades for you to ever pick anything up, and that's often a problem with monitoring regimes, that the monitoring bores are put far too far away from the source to be of any practical use. The horse has bolted by the time you pick it up, so what we're talking about is specific monitoring bores close in. There'd be fewer of them, not every water bore across the landscape, but that closer in early warning system, which is really critical, I believe.

Hon. Justice Pepper: I take it you would have no difficulty with that.

Tracey Winters: Look, we think that you probably need both for regional groundwater monitoring [crosstalk]

Dr. David Jones: Certainly for level, yes.

Tracey Winters: Yeah, in Queensland we use specific sites, specific monitoring bores, and also existing water bores, which gives us, when used in combination, that allows us to do a much better assessment of the regional groundwater system, so I think you need both, really.

Hon. Justice Pepper: Okay, yes. Professor Priestly, and then Dr. Smith.

Prof. Brian Priestly: You'll note that the panel reviewed some of the health risk assessments that have been done for various projects, including two by Santos, related to your Narrabri and Gladstone projects. We commented on the variability in the approach taken in some of the risk assessments, particularly in regard to



what exposure pathways were considered to be complete. My understanding of the basis for not including risks for certain pathways is that the management processes would result in those pathways being incomplete. However, the community concerns are that if things go wrong, what would be the health risk associated with completion of those pathways? Would you be prepared to undertake in any future health risk assessments to try and address this issue of pathways which are perhaps unlikely, but if they did occur, may represent some sort of health risk to nearby communities? I'm thinking in particular of water contamination pathways and offsite airborne pathways.

Tracey Winters: Professor Priestly, I can think of no reason why we couldn't do that, but I will take it on notice and come back to you.

Hon. Justice Pepper: Thank you. Yes, Dr. Smith.

Dr. Ross Smith: Thank you. I appreciate that your comments about water management issues raised in the draft final report are generally supportive, but I just want to take up on some conversations that it seems that you're aware of that we had yesterday, about specifically the use of enclosed tanks rather than open ponds, and just wondered whether you had some further comment to make on that discussion.

Geoff Atherton: Yeah, so I think you've got to look at each site, the time of year, the volume of fluid, the quality of fluid, the type, and what you're going to do with it. Now, obviously in the Cooper Basin, where we have huge evaporation rates, we predominantly use large open tanks, as you saw when you visited Cooper. I think it depends on the time of year. The easiest way to get rid of fluid is evaporation, I think. It takes no hauling, it takes no processing, it takes all the risk away of moving and all that type of stuff. Realistically, if you're at the end of the dry season coming into the wet season, and you cannot move the water out, you have no choice but to use enclosed tanks if there's any risk at all that you're going to get stuck there, if you've got road access issues.

I think for us, we would look at it based on the well, the flow back fluids, the amount of water we're going to end up with after fracking, and particular time of year. I think time of year and the accessibility, and our ease of processing would massively influence what we use. I see that the biggest challenge is when we're doing the appraisal work, because we don't have any infrastructure. As you probably saw when you visited Moomba, when we've got infrastructure in place, it's relatively easy for us to pump fluids across to a central processing facility, like I think you saw we were doing that when you visited down there, and then we have much better capability of processing it. I think we would have to just look at it on a ... I would be reluctant to say that the lowest risk and most efficient way of working is to have enclosed tanks across the board, because I think it depends on the location and the time of year, primarily.

Dr. Ross Smith: Yesterday we had some discussions about potentially some hybrid arrangements of being able to use some capacity for evaporation, whilst



largely containing in enclosed tanks. Those comments that you've just made seem fairly compatible with that sort of approach.

Geoff Atherton: Exactly.

Dr. Ross Smith: Yeah. Okay, thank you.

Hon. Justice Pepper: Yes, Dr. Ritchie.

Dr. David Ritchie: Thank you. As you probably noticed it in our chapter on Aboriginal culture and protection of sites, we've really drawn on the approach that Santos outlined to us earlier, at our earlier hearing. We were at that stage of the report where we were looking for industry support for some of our recommendations. I just wanted to put it to you and take you through some of those recommendations, to be clear about what you do support, and to pick up anything that you find problematic. The first two really are quite specific, which is the requirement that it be mandated that the industry gets authority certificates for its operations in the Northern Territory. Is that something that you would support?

Che Cockatoo-Collins: Hello, Dr. Ritchie. That is something that we agree with and something that is already of standard practise.

Dr. David Ritchie: Yeah, I thought so. Good. The second one is the recommended changes to the Sacred Sites legislation, to make it clear that it does apply to features that extend below the ground. Again, that general sort of ...

Che Cockatoo-Collins: Yes, and I understand the premise of that question. Our thoughts would be we're very reluctant to support such changes to legislation because of the potential for duplication, even under the Land Rights Act, and so what we don't want to happen is for the land councils' roles to be diminished in any way. I know that's what the panel is not advocating for either, but I think there's a real danger in that happening if legislation under the Sacred Sites Act is changed or altered.

Dr. David Ritchie: Okay. I think I'd like to explore that a bit, if I may, because at the moment, if you've seen on our ... You'll see the Northern Land Council's submission to us, they believe that the law already extends to features that go below the ground, so we were really looking at just a clarification that the Sacred Sites Authority put to us that ... Sorry, the Aboriginal Areas Authority put to us that the matter was unclear, and in practise, there are many sites where features have been recognised as being underground. Particularly where it's rock formations that are visible on the surface but extend back under have been protected, and that it hasn't been problematic for industry, and the certificates are issued on that basis, so it's really only clarifying something that has existed in practise.

It's not going to change relationships between the two organisations, so I think it might be important to separate those two. I don't think they're the same issue, so duplication, firstly, just what is the actual problem that you would see with supporting the idea of sites extending under the ground,



given that you've written to us this morning to say that, just to quote this, "It is traditional owners who determine where exploration can take place without impacting sacred sites, both above and below the ground"?

**Che Cockatoo-Collins:** Yep. That's exactly right. We don't believe it's for us to say or recommend on legislation to tell Aboriginal people, particularly hosts, Aboriginal traditional owners, in this case, on what is a sacred site, whether that's surface or subsurface. I know it's hard, difficult for many to comprehend, but if you're legislating broadly for Aboriginal people and sacred sites, and not giving the traditional owners in that region the authority to educate the rest of us, and understanding that what happens in your region is not the same that reflects in your region, and you need to have that flexibility under any act to be able to give Aboriginal people and empower them to educate and maintain their cultural identity, surface, subsurface, I think it's more complicated than saying, "We need to legislate this broadly for everybody," because I don't believe it will work.

**Dr. David Ritchie:** Okay. Well, I'll give you some of the logic, that pretty well all the areas where gas is likely to be developed, if the moratorium is lifted, is in the Beetaloo Basin. The Beetaloo Basin is largely the kind of land interest held by the Aboriginal people, and that area is under native title. There is no veto under native title, and so that the way of exercising control over the use of the land comes down to the provisions in the Sacred Sites Act, which make it an offence to carry out works on or in the vicinity of a sacred site. The Sacred Site Clearance is something that is absolutely central to the exercise of Aboriginal, the right to deal with anybody operating on their country, and to make sure that culturally significant places aren't damaged or interfered with.

Whether it's the Land Council doing that, and the Lands Council has a specific role under their act to assist in that process, and the complementary legislation in the Northern Territory, the Aboriginal Sacred Sites Act, which uses the same definitions as the Land Rights Act, is designed to basically give those rights on areas that aren't Aboriginal land in the communal freehold sense. I think once you're accepting the proposition that it's okay, and you're all quite comfortable with having to obtain authority certificates, it's really then a question of whether, and this is why I just don't quite understand your objection, to then extending the right of the traditional owners the custodians of sites, to protect things that they believe that are important that lie below the ground.

**Tracey Winters:** Dr. Ritchie, can I just clarify something? I may have misunderstood this, but are you suggesting that the reason for needing the change to the legislation is because there's no right of veto in the Land Rights Act? [crosstalk]

**Dr. David Ritchie:** No, I'm not saying that that's the reason for the change. The act already exists. I'm just saying that without a veto, the only right, the only kind of power that ultimately, that Aboriginal people who have native title rights on pastoral leases, effectively, is through the Sacred Sites legislation. The bundle of rights that is included in native title includes specifically, in all the judgments from the Native Title Tribunal and determinations, the right to



protect culturally significant places, and the extent to which that right can actually be exercised in the real terms is under the legislation that's set up in whatever jurisdiction for that purpose. In the Northern Territory, it's the Sacred Sites legislation.

Che Cockatoo-Collins: Well, it might be a bit more ... If you're able to give us time to comment, if you're okay, we'll take that comment or question.

Hon. Justice Pepper: On notice?

Che Cockatoo-Collins: On notice.

Hon. Justice Pepper: That's fine.

Dr. David Ritchie: No, no, that's good.

Hon. Justice Pepper: That's fine.

Dr. David Ritchie: Yeah, I'm really as you say we're looking for support in this. I guess just to run up the next run up of questions, they were supposed to be the easy ones, about our specific recommendations about changes to regulations and legislation, but do you accept and see the reasons for our more general recommendations in that chapter about engaging that broader community in the basin, and that you do actually have a problem if you're going to be out seeking approvals in an area where there's actually a very high level of anxiety, if not to say opposition, to the industry? That's why we've put these things in, to assist you if it goes ahead, because we see it as a real emerging issue.

Hon. Justice Pepper: But not just to assist them, but also to make sure that when consultation occurs, it occurs fairly and properly.

Che Cockatoo-Collins: If we analyse the current situation, we'd have to take into account the areas not directly affected by exploration at this stage, and try to understand, well, why people are feeling like this. Is it because of a lack of consultation from us, or is it third-party intervention, or is it both? I think in the way that Santos operates through the land councils, through AAPA, obtaining Sacred Site Certification via the land councils meeting, and advising and informing the host traditional owners on the activities, and for them also to be an active participant in the project itself, with interpreters, with many of the recommendations you've set down in 11, from 1 to 8, many of those. I think a social licence begins with the people that are directly affected with your operations, and so for people to consent, be fully informed, and be compliant under both acts, the Land Rights Act and Sacred Sites Act, is integral to us beginning the journey of informing the wider community.

Hon. Justice Pepper: When you said third-party intervention, what did you mean by that? Can you clarify that comment?

Che Cockatoo-Collins: There's always opposition to any industry, and so I'm talking about people that may not have the best interest of the host traditional owners in mind. I



want to be fair to the vast majority of people that are concerned with aspects of the environment and real concerns around all industries, but what we would like is to have an informed discussion with people without agendas set, and then for us to inform them on scientific-based evidence, for them to go away and then come back and make an informed decision in that manner. I think I'll leave it at that. I think it's important to be fully informed of the scientific facts, and that's where I think I should leave it.

Hon. Justice Pepper: Thank you, yes. One last question from you, Dr. Ritchie.

Dr. David Ritchie: Thank you. Again, you have put to us today that you support the idea of getting authority certificates, and that you have got the authority certificates for all the works that you've done so far in the Northern Territory. Now, I just need just to clarify, you mentioned that you've done some hydraulic stimulation of wells in the Northern Territory earlier Ms Winters. Is that right? Did you have an authority certificate for that?

Tracey Winters: Dr. Ritchie, this was the Meerenie field a long time ago, so I think the regime was ... [crosstalk]

Dr. David Ritchie: Pre-1978?

Tracey Winters: I don't know what year it was, but we can come back to you on that, if you like.

Dr. David Ritchie: It's more that, I guess, my point is that, as I understand it, the three certificates issued are all for very preliminary scouting and exploration works, and that no certificates have actually been applied for or issued for anything else at this point. Is that, I guess, correct?

Tracey Winters: We haven't done anything.

Che Cockatoo-Collins: Yeah, we've had to stop work.

Dr. David Ritchie: Yeah, but nonetheless, it's really, my question is about experiences engaging with the reaction traditional owners on that particular set of works, is something that is yet to happen. Would that be fair?

Che Cockatoo-Collins: I can say that we're committed to being compliant under both acts, so we will approach both, well, we have to, the respective land councils and AAPA for Sacred Site certification.

Dr. David Ritchie: But at this stage, you don't actually know how people are going to react, because you haven't actually had to engage them on that particular proposition.

Che Cockatoo-Collins: Proposition for ...?

Dr. David Ritchie: For hydraulic fracturing.





Che Cockatoo-Collins: Well, through the land councils and talking to the host traditional owners with the land trust, so it's not just five people, it can vary to different numbers, we'll explain the project, we'll explain who we are, where we're from, what we want to do for that specific exploration project. I think you're saying ... Sorry, do you mind me ... Are you talking about, Dr. Ritchie, about looking into second and third phase of a project?

Dr. David Ritchie: I'm really just inviting you to contemplate that this is a bit of an unknown, how the traditional owners are going to react to a proposal to undertake hydraulic fracturing on your leases in the Beetaloo Basin, and that my purpose of asking you that question is then to just go back to that general point about recommendations 11.8, 11.6, which are all about an idea of your support for the idea of engaging that wider community in depth, in conjunction with government, lands councils, Sacred Sites authorities, quite apart from your specific industry, a need for approvals for specific works, but to get a much higher level of understanding across that whole community, and to understand what their concerns are to inform your processes. That's our intention, and I'm looking for whether you can support that.

Tracey Winters: [crosstalk] Dr. Ritchie, we will engage very widely. We have been everywhere else that we've operated, so certainly we're happy to engage with a wide range of stakeholders. I think, correct me if I'm work, Che, that at the same time on matters relevant to the host native title owners, we would say that they are the right people to be engaging with.

Che Cockatoo-Collins: Yeah and they are... [crosstalk]

Hon. Justice Pepper: Hang on, though, I just want to just let Che finish. Thanks.

Che Cockatoo-Collins: I think it's important to also acknowledge that the host traditional owners, the ones that are being directly impacted, are active participants, have fully consented, have been fully informed, and again, are active participants in the project, and we'll continue to be compliant under both acts. I don't know what else we can say to reassure the wider community that traditional owners know exactly what we're doing. They do, and you'd be naïve to think that they wouldn't understand the future phases of those projects, with all of the conversation going around, but again, the nature of the industry is, well, we don't know whether it's actually feasible yet, this project, so why would we want to ... It's probably not absolutely necessary to go into those second and third phases of any project until you actually know what you have. I think that's where a lot of the conversation's being taken out of our hands, and we need to get back to those facts. We simply don't know what the well will bring. Is it feasible? Will people invest? Will the business invest in that region? That's where we are at this point.

Dr. David Ritchie: Okay. Thank you. The sort of yes/no question then is, do you see a value, though, in the recommendations 11.6, 11.8, which are about a more broad and broadly based engagement with that cultural block of people, say, from Ngukurr down to Elliott and extending out across that basin? Because our reason for having that recommendation is because it's been put to us very



strongly that all those groups are really part of a cultural block, they're linked by their Gujingga songlines, and that they believe that as a group, they should be engaged. Now, that's quite different from the approvals you need to do legally to create.. for agreements with traditional owners. Absolutely you deal with the traditional owners, you deal through the lands councils, who are their representatives, and we completely understand that's a process that you have to go to, like it's a business relationship that you're forming with them.

Our recommendation is about creating an environment in that whole region that is fully across what's going on, and that is able to feel that they have a stake in it, separate from the sorts of specific work that you have to do to engage with the actual legal owners of the areas you want to work on, and so really just looking for yes/no, I see, we see, as an industry we see value in that, or no we don't see value in that.

Tracey Winters: Dr. Ritchie, at this stage, I think we can't give you a yes/no answer. In principle, we support the idea of comprehensive engagement, but just as by way of example, not if it disempowers the traditional owners of the land. In principle, yes, but over time I guess we need to see how this is implemented and those kinds of caveats would apply.

Dr. David Ritchie: Thank you. Thank you.

Dr. Alan Andersen: Just quickly, I'd like to go back to the issue of prescriptive versus objective-based regulation. It's an issue that's raised in your written submission for biodiversity, weed and fire management, and just would like to make the comment, it would be very useful if you could provide some specific information about specific concerns and reasons why so that we could take them on board.

Tracey Winters: Dr. Andersen, I'm not sure that we're in a position to do that against every recommendation. I'll just give an example, though. As we've said before, there are only three wells have ever been drilled in this shale play, so like you, we don't have a lot of information about it yet, and I think that certainly, all of the very detailed objectives regarding well integrity, weed management, fire, setbacks, well spacings, all those sorts of things, the objectives around all of those issues need to be clearly spelled out, as they have been by the panel, but the reality is that having only drilled three wells, not having had the detailed engagement with landholders, with traditional owners, with the community, that we think it's probably a bit too early to be too prescriptive, because whilst the community or landholders might feel that way now, as we work together over time, collect more data, as trust builds, and we hope that we can rebuild trust, then I think that's the time to introduce prescription if that's what people still want, but I think to try to work out exactly what the prescriptive requirements would be now, in the absence of the strategic assessment, in the absence of having assessed the resource more and worked out how we would develop it if we would, I think it's very difficult for us to come back with specifics on prescription.



Dr. Alan Andersen: Yeah, thanks for that. I wasn't expecting that information now. It was more on notice, but still, if there's something in particular that is concerning, it would be useful for us to ...

Geoff Atherton: The weed management is interesting, though, because kind of there are some specifics that a weed control person, officer, whatever it was, if we look at it and if we were to define what we wanted, we would probably say we need to have something that prevents weed contamination as an objective. Exactly as Tracey says, so far what that looks like, I don't think we know at this point in time. It may be something monitoring, it may be a policeman monitoring, or it may be processes, or it may be other checks and measures, and as time goes on, it might not be as big an issue, because we just don't know at this point in time. I think that to set the objective of not transferring weeds, or seeds or whatever it is from area A to area B is a reasonable objective, but to define what that looks like at this point feels really difficult.

It's similar with the well pad spacing, which is, we kind of look at the well spacing and say, we've got surface and subsurface hazards. We don't know what they are at the moment, so we don't know where the creeks are, where there's any hills, where there's any sacred sites. We don't really know the shallow faulting because we haven't done that much work, but to stipulate a spacing at this point in time, as opposed to something that gives more flexibility to move sites closer together or further apart to work around various hazards, would probably, from our side, be a much better way of articulating the same objective, because I'm sure that ... Because we're not on a flat plane, we're not in the middle of the desert in a flat plane, I know we will not be having two kilometre well spacing, because there are definitely obstructions, surface and subsurface, that prevent us from doing that.

Dr. Alan Andersen: Yeah, so thanks for that, but I think you'd appreciate that some degree of prescription is appropriate, given public concerns, and that the public would not accept a proposition that you can basically trust us we'll do it.

Geoff Atherton: Oh, definitely. Yeah, but possibly to label it up as a whatever percentage disturbance or something like that, that gives flexibility to move things around, may be the more reasonable position.

Hon. Justice Pepper: This is where it's in your interest to give us the detail.

Geoff Atherton: Yeah.

Hon. Justice Pepper: Yes, Dr. Beck.

Dr. Vaughan Beck: Yes. My question will start from the specific and then go to the more general, but it does build upon some of the comments that have been made previously, and in respect of the issue of monitoring, it's noted that there's a concern about the prescription approach, and the request that the panel consider a risk and objective-based approach, but no details were provided. We started to tease a little bit out during the questions, but not a lot was



forthcoming. There I go to, I think it's in the introductory section, where Santos notes that the panel's recommendations, when implemented, could potentially allow for economic development, but goes on to note that ongoing consultation by governing regulators with stakeholders, including industry, and a focus on risk-based and objective-based regulation will be essential to facilitate outcomes.

One interpretation that could be made from that statement, and from looking at the rest of the submission, is that Santos are going to defer the provision of any details to the stage when government may be looking to modify regulations, and the provision of specificity may be not in great detail, but even in some broad outlines, which could say, "Here is some of the issues that I think you might consider in terms of prescription," are going to be deferred until post this panel's deliberations, and you will engage only on those matters with industry, with government and the regulators.

Tracey Winters:

Dr. Beck, I think our understanding is that the panel is recommending the establishment of a regulatory regime for production, and so we genuinely think that that detail will come out as data is collected during the course of the regulatory regime development, so there will be a strategic, environmental and baseline assessment, and assuming that small scale exploration and appraisal is allowed to continue, there will be more information collected during that process. That is exactly what we've been talking about, and that is how we think the regulatory regime will need to be developed. As we all learn more, as we consult more with the community on the detail and what we learn from the exploration appraisal activity and the strategic, environmental and baseline assessments, that that will allow everybody to have a more detailed conversation.

Dr. Vaughan Beck:

Accepting that as you go through exploration, there will be more information, nevertheless, Santos, as you outlined again, have been involved in oil and gas exploration and extensive shale gas operations in Australia for many years, and you have extensive experience in terms of shale operations. I would have thought that there would have been some principles that you may have cared to have outlined to the panel, which would have articulated a little bit more detail on some of the areas where you could have thought that some of the objective-based regulations could have been implemented.

Tracey Winters:

Dr. Beck, I'm happy to take that on notice and come back to you. We're operating very successfully under the Queensland regulatory regime and the conditions of our commonwealth approvals, and I understand that you would have access to all of those approvals, which are in the public domain, and the reports, which are up on the environment department's websites, both in Queensland and at the commonwealth level, so I guess the specifics, we think, are in those approvals and that regulatory regime, if you like, but we can say that we've worked very successfully under that regulatory regime in Queensland and at the commonwealth level, and also in South Australia, and Western Australia, and offshore. I think many of the specifics are in those regulatory regimes already.



Hon. Justice Pepper: Well, again, it's in your interest to furnish us with the specifics if you have them at hand, and if you think that they're more appropriate than that which we have suggested.

Tracey Winters: Okay.

Hon. Justice Pepper: Perhaps just one final question from the Chair.

Prof. Barry Hart: No more questions.

Hon. Justice Pepper: You've made reference to the Queensland regulatory regime, West Australia, South Australia, the Hunter review, the Hawke review. Do you accept, then, that there is still more work to be done to strengthen the regulatory regime in the Northern Territory?

Tracey Winters: We accept the panel's recommendation that changes to the regulatory regime be made before production licences are issued, certainly, yes.

Hon. Justice Pepper: Do I take that as an answer to my question as yes?

Tracey Winters: For production, yes. We think that with the changes that have already been made, and given the types of impacts that arise, that the existing regime is adequate for exploration and appraisal activities to resume safely.

Hon. Justice Pepper: Thank you very much for coming today and being subjected to lengthy questioning. Many haven't. We are running late but rest assured that will only cut into our break time and not the presenters to follow they will still have the same time allocated to them.