



Tennant Creek – Australian Petroleum Production and Exploration Association (APPEA)

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10 August 2017

Tennant Creek, Tennant Creek Civic Hall

Speakers: Matthew Doman, Keld Knudsen, Adam Welch

Hon. Justice

Rachel Pepper:

Hearing in Tennant Creek is part of the second round of consultations. Scientific enquiry into hydraulic fracturing in the Northern Territory. I'd like to commence by acknowledging the traditional owners of the land by which we meet today, the Warumungu people. I pay my respects to their elders past, present and future. Let me introduce the members of the panel that we have here today. Commencing on my left we have professor Brian Priestly, Dr Allan Dr. Andersen, professor Barry Hart AM, myself, chair of the enquiry justice Rachael Pepper. To my right I have Dr Vaughan, Dr. Beck AM and Dr David Ritchie.

For those of you unfamiliar with the way that the hearings proceed, after 10 minutes I will show you a green card which says you've got 10 minutes to go. After five minutes you'll see an orange card that says you have five minutes to go. After zero minutes you'll see a red card. Otherwise when you're ready to commence please do so. If you can start by stating your names and who you're appearing on behalf of if you're appearing on behalf of an entity or an organisation, thank you. Could I just ask everybody, both the presenters and the panel to make sure you speak into your microphone.

This place is quite large and there's a lot of feedback so please speak in the microphone. Thank you.

Matthew Doman:

Thank you chair. Good morning and thanks again for the opportunity to appear today. My name is Matthew Doman, I am the Director for South Australia and the Northern Territory for the Australian Petroleum Production and Exploration Association. My colleagues here today are Keld Knudsen who is our Policy Director - Exploration. Keld covers exploration nationally, both the onshore and offshore. Adam Welch, our Senior Policy Adviser. Adam is responsible for our regulatory policy work here in the Northern Territory. He is part of the APPEA's national economics team covering market and greenhouse gas policy.

Hon. Justice

Rachel Pepper:

Thank you. Mr. Knudsen how do you spell your surname?



Keld Knudsen: It's K-N-U-D-S-E-N.

Hon. Justice

Rachel Pepper: Thank you very much. Yes. Whenever you're ready.

Matthew Doman: We also acknowledge that this meeting is being held on the traditional lands of the Warumungu people, I wish to acknowledge them and pay respects to their elders, past and present. The elders from other communities who might be here today or watching the recording. As you know APPEA is the peak national body representing Australia's upstream oil and gas industry. Our members have been producing gas for homes and businesses in the Territory for decades. More recently members have developed the Territory's growing LNG industry. Today APPEA members see an exciting opportunity to develop more of the Territory's large onshore natural gas resources.

Developing these resources will bring a raft of benefits. Regional communities can expect to see more jobs and better infrastructure. The Territory Government can expect growing royalties and new sources of energy for local industry. Developing new onshore resources here will contribute to alleviating tight conditions in the Eastern Australian gas market. While the industry can point to decades of successful safety and environmental performance in the Territory and elsewhere in Australia, we understand that the industry must address the legitimate concerns held by the community. This is a challenge give the well-resourced campaigns which are striving to create fear and confusion.

For that reason we welcome an open public Inquiry not just to allow broad community discussion of these issues but to paraphrase the Panel's Interim Report, to give the community the truth in this polarized debate. For our part, we're confident that the facts support our view that with effective regulation the industry can safely develop the Territory's Shale gas resources. We're encouraged by the strong undercurrent of support for our industry locally. Our supporters may not attend public meetings or join protests. Nevertheless there are many Territorians who support the industry.

There are many other Territorians who may not have a firm view today but whom we believe will benefit from industry development. As suggested we wish to give a short presentation responding to the questions posed by the panel, either in the interim report or in recent correspondence. On technical issues we would encourage people to read the comprehensive submissions from APPEA members to the Inquiry. Naturally we'll be pleased to provide written detailed responses to any further questions the Panel may have today.

As this slide outlines, the issues raised with us focus on four chapters in the interim report. Shale gas development and management which is chapter five and in particular relating to the issue of well integrity. Greenhouse gas emissions in chapter nine. Economic impacts in chapter 13, the regulatory



reform which is chapter 14. We'd also like as we move through these topics to respond to some of the claims made in recent hearings. I'd now like to hand over to Keld to discuss chapter five on shale gas development and management.

Keld Knudsen:

Thank you Matt. Thank you panel. Section 5.3.2 of the interim report provides a good summary of the Australian and international evidence concerning well integrity. These sources are based on extensive field research and data. They confirm that the risk of properly constructed modern wells failing is remote. The panel has heard claims from witnesses including Lock the Gate which challenged the findings of some of these independent studies.

One witness has cited a paper by Davies et al and Lock the Gate usually relies on a US study by Anthony Ingraffea. Evidence suggests that both papers are flawed. The Davies paper has received a scathing review from researchers at the University of Glasgow who assessed that the paper appears to be using innuendo to talk up potential future problem in onshore unconventional hydrocarbon development in the UK to a degree that is simply not warranted by the evidence presented in the paper.

Origin's submission, and I believe you heard from them yesterday, explains why the Anthony Ingraffea study is also flawed on pages 175 and 178 of their submission. Both the Davies and Ingraffea papers are misleading in that they use data sets which equate a single barrier failure with an entire well failure. Wells also have multiple barriers active and reactive such as well casings, drilling muds and blowout preventers. A single barrier failure with no leak path does not result in a full well failure.

Wells are designed with multiple barriers so that if one barrier fails, other barriers prevent full failure. The barrier failure will be detected and leads to corrective action. Over the course of the Inquiry, APPEA has presented information from numerous studies which shows the effectiveness of industry measures for well integrity. Last week the Panel also heard claims from Lock the Gate which seemed to imply that a new unpublished paper somehow contradicts this work.

We'll be pleased to provide the Panel with a copy of that paper by Raj Kiran and you can draw your own conclusions from the evidence in it. Given the misinformation on this issue, the Panel may wish to expand a section in the interim report on well integrity to also cover well barriers in a little bit more detail. Wells are designed to keep gas in and to keep water out. The environmental priority also aligns with the commercial priority. The industry constructs wells to the highest standards and in light of the specific conditions at each site.

We support tools like minimum standards and good oil field practice requirements such as the code of practice for constructing and abandoning petroleum and associated bores in Queensland. The interim report covers minimum standards at 14.4.4. It is important that such measures can be



flexible to keep pace with the latest technology and industry innovations. In Queensland the Code of Practice is underpinned by legislation which means it can be enforceable but it is not a legislative instrument.

The Queensland code is up to its third version. I'd like to touch on decommissioning and well remediation. The interim report on page 28 discusses long term abandonment of wells. This section rightly concludes that the presence of several layers of cement plugs should mitigate the risk. The Panel and some witnesses have indicated that more information will be useful here. The aim of well decommissioning is to leave minimum evidence that oil and gas operations have taken place on the site.

On the surface, extensive decommissioning involves rehabilitation of the site, allowing it to return to its previous use. At the subsurface level, decommissioning involves restoring the cap rock by inserting tailored and cement plugs often hundreds of metres in length to close a narrow well path to the surface and to isolate the various formations that the well passes through. Numerous standards and regulatory requirements apply to ensure that the plug is effective and long lasting.

Cementing the cap is highly technical and carefully planned. Specialised cement is engineered for local conditions. Once set, the plug is thoroughly tested to ensure a complete and long term cap. There is literature about the long term performance of cement and steel in abandoned wells. These studies include Pearce 2005, Huerta et al 2008, Lecolier et al 2008 and Van der Kuip, et al 2011. These studies conclude that barriers should last indefinitely.

The Van der Kuip study modelled cement lasting over 10,000 years under extreme conditions such as high CO₂ content, 204 degrees Celsius and over 1000 psi pressure. This supports the industry's experience that cement will isolate the upper aquifers over the longer term. We'll provide these references to the panel in our written response. The New South Wales Chief Scientist when investigating this topic as part of her inquiry into coal seam gas concluded that if wells are properly designed, installed and maintained the risk of long term leakage is minimal.

After plugging and marking the well site, the surface can be remediated with soil treatments or replanting to ensure that past practices such as agriculture can resume. The location of the wells is recorded to ensure ongoing monitoring. A remediated well will have nothing to monitor as it is designed to be safe and to ensure that it poses no material threat to safety and the environment for future generations. Even though 100% containment is expected, companies do implement monitoring programs on decommissioned wells and this continues for a number of years.

Permanently decommissioned wells are covered by the company's risk management system. Monitoring techniques generally involve direct methods for monitoring such as near surface measurements, remote



sensing and other methods. I'd like to hand over to Adam to discuss chapter nine.

Adam Welch:

Thank you Keld, thank you Chair and Panel. Turning now to the greenhouse gas emissions section of chapter nine of the Interim Report. The Industry strives to minimise methane emissions from upstream operations for both commercial and environmental reasons. The environmental benefit of minimizing emissions is so obvious. The commercial benefit is also obvious. Emissions are gas which would otherwise have been sold. The interim report confirms the findings of countless other studies shale gas is a low emissions fuel and combined cycle turbines, gas turbines, emit roughly half the greenhouse gases of coal fire powered generation. A raft of reports from Australia's Chief Scientists, the Australian Energy Market Operator and the Australian Energy Market Commission have confirmed that gas fired generation is increasingly important for energy security providing the on call power to underpin high levels of renewables in the energy mix. So our critics have obviously had to invent other arguments. Some witnesses have questioned the scale of fugitive emissions from upstream activities.

Since 2007, national reporting legislation has been in place and Australian has had a comprehensive regime requiring all large facilities to measure and report their emissions. Fugitive emissions from onshore gas extraction activities are estimated according to the National Greenhouse and Energy Reporting Scheme (NGERS). The NGERS Estimates are calculated using methods subject to external independent review each year by an expert review team selected by the United Nations Framework Convention on Climate Change.

The Commonwealth Department of Energy and the Environment also review these methods to take account of the latest developments in Australia and overseas. The Panel's interim report gives some attention to a report from the Melbourne Energy Institute. Two studies released after the interim report by the CSIRO and the Department of Energy and Environment provide a more comprehensive assessment of emissions using new field data, and analysis of Australian and US data sets. The first report, methane emissions from CSG well completion activities in May 2017.

This study measured fugitive emissions from well completion and work over at both hydraulically fractured and non fractured wells. The study found fugitive emissions from well completion events in CSG fields are significantly lower than current estimates in the national inventory. The results of this study were used to update the methods in Australia's 2017 submission to the UNFCCC and under the Kyoto protocol. The Department of Environment and Energy's report update on recent empirical evidence, on fugitive emissions from the gas industry, June 2017 involved empirical research into the fugitive emissions of methane from Australian CSG fields since 2013.

As mentioned this report post dates the release of the Inquiry's interim report and appears to update and in many cases supersede many of the findings of chapter nine. In particular, the Department's report concludes



the new methods support emissions and estimates for Australia are broadly consistent with outcomes reported for the United States by the USEPA taking into account the empirical data from Australia. APPEA requests that the panel consider these latest reports which show that research in this field is ongoing and underpins an effective national reporting system.

APPEA would caution against suggestions to create new greenhouse gas reporting measures which duplicate or are inconsistent with the well established national framework. I'd now like to ask Matt to talk about the economics.

Matthew Doman: Turning to chapter 13 on economic impacts, we are aware that ACILAllen are working to deliver their report to the Panel by the first of September. It's important that this work is made available to the public as soon as possible. To inform and supplement the ASEL work, APPEA would like to direct the Panel's attention to a series of new reports and analyses published since the release of the interim report. Slide nine refers to the Queensland GasFields commission report.

The panel has heard some bizarre arguments claiming that onshore gas development will not deliver economic benefits while people can debate how much onshore development is likely if the industry is allowed to proceed, we have ample evidence that onshore development can deliver substantial, broad and lasting benefits to the Territory. In many regional areas, the industry is the only option for creating jobs and delivering new infrastructure. The experience in Queensland shows how governments, local communities, land holders and gas companies can work together to deliver jobs and economic opportunities.

The GasField's Commission report on New Ground released last month, confirms the realised benefits to Queensland. As you can see the CSG industry has delivered an almost \$13 billion to boost the Queensland economy. Supporting more than 4,700 direct full time jobs in 2015/16. In that same year \$5.3 billion made its way to local Queensland businesses and community organisations. The report finds that almost \$240 million in direct payments have been made to land holders between 2010 and 2016.

Beyond the economic analysis, the GasFields commission report lays out a road map for successful development of onshore natural gas industries and we commend it to the panel. Slide 10 refers to some recent work from AEMO. Another strange argument presented to the Panel is that there is no demand for Northern Territory gas. In addition to the Northern Territory's own demand for gas for generating electricity, household and industrial applications, there can be no doubt that the global demand for gas in the form of LNG is steadily growing and the Eastern states domestic gas market is tight and will need new supply.

While we do not agree with the forecast of a possible shortfall in the East coast gas market presented in the Australian Energy Market Operator's 2017 Gas Statement of Opportunities, we do acknowledge the East coast



market is unnecessarily tight due partly to political restrictions on developing new supplies. We agree with AEMO that the gas supply and demand is finally balanced. New supply is needed to lift volumes in the market, put downward pressure on prices and enhance retail competition.

Without gas development to support gas power generation, electricity shortfalls could occur with flow on effects on price and security. The International Energy agency suggests that Australia's gas production volumes will more than triple by 2040. To sustain this growth, the IEA forecasts that Australia will require around \$400 billion in upstream oil and gas investment in the period up to 2040. I'm going to hand back to Adam to look at the global LNG demand.

Adam Welch:

Thank you Matt. Turning now to the global demand for natural gas. Since the release of the interim report, the International Energy Agency released it's Gas 2017 report providing analysis and forecast of global gas markets out to 2022. Consistent with the findings in its highly regarded annual world energy outlook reports, the IEA expects that gas will continue to be the fastest growing fossil fuel over the forecast period. In releasing its recent report, the IE's Executive Director Fatih Birol said: "The environmental advantages of natural gas, particularly when replacing coal deserve more attention from policy makers."

Gas is clearly increasing its share of the global energy mix. The IEA expects that the global gas market will expand by 48 % out to 2040 overtaking coal during the 2030's to become the second largest fuel in the global energy mix. On the back of this growth, the LNG market continues to expand. While the IEA reports that there is ample global gas supply today, this supply is being quickly soaked up. Since 2005, the number of countries importing LNG has grown from 15 to 39 today. Despite what the Panel has heard from those opposed to gas development, the outlook for natural gas remains bright.

I'd now like to move on to slide 12. Regulatory reform, chapter 14 of the Interim Report. Significant work has been undertaken in the NT to update relevant petroleum regulation and legislation. As the Panel is well aware, the reports by Dr. Allan Hawke, an international petroleum law expert, Dr. Tina Hunter, have led to improvements and proposed changes to the NT's petroleum and environmental legislative frameworks. Tina Hunter found that the petroleum environment regulations in the NT, the 2016 version, are a solid regulatory tool for future petroleum activities.

I quote, "The fundamental aspects of the regulations are sound. The use of risk based regulation is a welcomed addition in regulating petroleum activities. Further, such risk based regulation will ensure environmental harm will be minimised and give the Northern Territory Government enhanced scope and the capacity to implement best practice in the regulation of petroleum activities in the Northern Territory." Turning further on regulatory best practice, we understand the Panel is assessing the



structure and oversight of the array of legislation applying in the NT's petroleum industry.

The Department of Primary Industry and Resources in its submission to the Panel's background and issues paper identified at least 20 NT Acts and four Commonwealth acts applying to the activities of APPEA's members in the Northern Territory. To understand how this operates in the real world, we would encourage the Panel to review the 2009 Report on the Regulatory Burden on the Upstream Petroleum Sector. The Productivity Commission report includes a detailed discussion on best practice regulation and structures to manage the policy, promotion and regulation of the oil and gas industry.

This best practice discussion in part derives from work undertaken over recent decades on regulation by the OECD, culminating in the Recommendation of the Council on Regulatory Policy and Governance report in 2012. We encourage the panel to review both the OECD recommendations and the Productivity Commission report.

Matthew Doman:

Finally we'll turn to chapter 14.5 on land access. APPEA strongly supports policies that foster coexistence. Working together has been successful and will continue to be the most effective way to manage land access in Australia. We don't support a right of veto for the same reasons that you've outlined on page 124 of your report. While there is no current statutory requirement to have an access agreement, the panel has noted the government's policy that in agreement must be in place before activity approvals can be sought.

We also support the Panel's view that a standard land access agreement will assist both the land owners and the industry to come to a cost effective and efficient agreement. APPEA has worked proactively with government, industry and stakeholders to develop a standard land access agreement in Western Australia. One is being finalised in Queensland. It's the Panel's view that gas companies should pay all legal fees when determining an access agreement. APPEA understands this but supports where legal representation is required that fees be restricted to those that are reasonable and necessary.

We also support a body like Queensland's GasFields Commission. A recent review has found that the Commission has contributed substantially to the improved coexistence of land holders, regional communities and the onshore gas industry in Queensland. In conclusion we thank the Inquiry for its detailed interim report. We will be providing an additional written response that expands on what we've mentioned here today and addresses additional sections that we've not had time to cover. This includes additional questions you've asked in your correspondence

We understand the community has genuine questions and concerns and the industry is committed to respond to those and indeed we're doing so. Developing the Northern Territory's abundant gas resources will only



proceed if that development meets the needs of Territorians. These include the need for reliable affordable energy, for economic growth, jobs and investment in regional communities and at all times protecting the Territory's unique environment. The natural gas industry has delivered these benefits for decades and is very confident that with support of government industry partners and the broader community it can continue to do so. We thank you for your time and we'd welcome any questions that you have.

Hon. Justice
Rachel Pepper:

Thank you very much to the three presenters in particular for answering our questions on notice within the time frame, we appreciate that. Just a couple of comments I suppose before a few questions. In terms of the economic report by Asel Allan, I can assure you the public will get that report exactly the same time that the inquiry gets that report. There'll be no delay in that respect..... the first of September in the interim report as a result of the panel's oversight as we indicated we would of that process in settling the assumptions and oversight of their work.

May well be that it's not exactly on the first of September but close to that date. As I said, soon as we get it, the public will get it. The other second comment I wanted to make was, I think you said that you didn't support a right of Veto for pastoralists contrary to the position of the NTCA for, I think your words were the same reasons as specified in the interim report. I don't want that to be seen in any way as some endorsement by us of those reasons. We just said out the reasons for and against a right of Veto.

I don't wish to have anybody listening into this or viewing this in exotic locations to understand that we would support your position that there ought not be a right of Veto at this stage. All right, a couple of questions. Just in relation to the regulatory reform. I think you'd said that significant work has been already undertaken with respect to reform in the Northern Territory in relation to petroleum resources and the environmental framework. What do you consider to be those reforms that have occurred? Those, in your words, improvements.

Adam Welch:

I was referring to in the environment section in particular the second report by Dr. Allan Hawke. Then the subsequent discussion paper released this year by the Department of Environment Natural Resources laying out their process, looking at how the environmental reform or the environmental framework would look like in Northern Territory.

Hon. Justice
Rachel Pepper:

Okay, sorry, so you're saying those reforms, that they haven't occurred yet but they're going to? Is that what your position is?

Adam Welch:

On the environment, territory wide environment side, yes. Secondly on the petroleum side we've seen the improvements last year with the Petroleum Environment Regulations being introduced. We understand from the Department of Primary Industry and Resources submission that they have a number of other reform processes they'd like to commence.

Hon. Justice
Rachel Pepper:

You accept they're not there? It's more of a considerably more work to do



or more work to do?

Adam Welch: Yeah.

Hon. Justice
Rachel Pepper: All right. You don't consider that we're done in terms of regulatory reform in the Northern Territory?

Adam Welch: It'd be a fair argument to say that no jurisdiction's ever done with regulatory reform. It's always consistently reviewing, making sure that it's up to date and reflects global best practice.

Hon. Justice
Rachel Pepper: Thank you. In relation to the, I think you said that the Eastern gas market is tight due to lack of supply, if I understood your submission correctly. Part of that was due to politics. I assume you were referring to various moratoria. Isn't it the case indeed that there's lots of supply, it just happens to be exported overseas?

Matthew Doman: I think there is, as you say, abundant gas resources and we've seen considerable development of those resources in recent years. As an industry the planning time frames are long, the export pathway that's been created in Queensland has enabled the development of gas fields in that state that would not, given the scale and the economies of scale required would not have been developed for the existing level of domestic demand. At the same time the industry, individual companies within the industry made plans looking at the development of the industry that would have seen the creation of an export pathway out of Gladstone in Queensland.

They would have seen growing, continuing demand for gas in Eastern Australia. Projects such as coal seam gas resources in New South Wales being developed by this point to enable the domestic demand to be met as well as the export opportunity to be pursued. I think the single biggest thing that would have been anticipated four or five years ago we have not yet seen is the development of gas resources, onshore gas resources in New South Wales. They've been delayed by a range of both political considerations in that state, regulatory reform processes. In recent times some of the economic challenges facing the proponent companies.

We have not seen after seven or eight years of discussing the development of coal seam in gas resources in New South Wales, we have not seen the additional resources coming to market. That alone is probably the biggest single factor contributing to the current looming shortages in Eastern Australia. We also see of course at the moment a moratorium not only on unconventional but on conventional onshore gas development in Victoria. The new government of Western Australia is proposing restrictions on onshore gas there.

We believe there are abundant resources in this country to meet all of that domestic need and fulfil the economic opportunities that come with export. To a very large degree the tightness in the market at the moment is being



contributed to by a lack of political will to enable that resource development. That's we think the major factor contributing to the current tightness.

Hon. Justice
Rachel Pepper:

Thank you. Yes Dr. Andersen.

Dr Alan Andersen:

Thanks for your presentations. I've got questions over three issues. The first one is the .. economics ...Justice Pepper has asked about it. The assessments that the panel has received to the effect that there's a current and a future glut of gas that any new supply from the ...will not lead to downward price pressure on the East coast. That will come from the range of independent economists. The panel is yet to receive a counter view from any other independent economists. As an example the panel was informed that because the cost of NT gas combining production and transport will be about what customers on the East coast are currently paying now.

More of that gas cannot possibly lead to lower prices. How would you respond to that?

Adam Welch:

Probably a good response to that is no one knows yet what the cost of developing the Northern Territory's onshore gas resources will be.

Hon. Justice
Rachel Pepper:

...we've had a number of reports estimating about \$7.50 for per gigajoule, it's quite consistent.

Adam Welch:

We've seen those reports as well. I think you've heard evidence from Origin and media reports on Origin, they don't yet know what the cost of gas will be to develop into the East coast market or export markets for that matter. That's why we need ongoing exploration and appraisal activity to better understand what the commercial opportunities are and commercial barriers are.

Matthew Doman:

I think one of the factors is that we have seen across our industry rising costs of production. Whilst it is early days in terms of the assessment of the resources in the Northern Territory, there are indications as you say around the seven to eight dollar mark for developing gas resources here. We believe that that will enable the provision of affordable gas into Eastern Australia. In the broader debate around gas prices in Australia, we see some who believe that the historical prices can be returned to, historical prices of three to four dollars.

We as an industry, looking at the core structure of our industry, the cost of developing new resources and indeed the cost of developing new unconventional resources. We don't believe that we can return to those prices. We do believe that those prices internationally are very competitive. We believe that some of the current discussions around prices, considerably higher than that. We talk of pricing in the 15 to 20 dollar range. We simply should not be facing gas prices of that nature in Australia given our abundant resources.



On the question over the economists that have appeared before this panel, one of them said in a public meeting in Darwin that anyone who can say with a straight face that they're an economist is an economist. I think for us to comment upon the economic credentials of some who contribute to the economic discussion here could be seen to be self-serving. I think that the work that people like ACILAllen is doing is very credible work and we await for the outcome of it.

Hon. Justice

Rachel Pepper:

Sorry, go ahead.

Dr Alan Andersen:

My second question refers to abandoned wells and what longer term monitoring protocols would you recommend are needed? For how long do you think the wells should be monitored, who should do the monitoring and who pays and how?

Keld Knudsen:

Thank you Dr. Andersen. The ultimate goal is that there's nothing to monitor and that the ongoing monitoring wouldn't actually pick anything up. The process in Queensland is that, as we see it in other fields, the monitoring process is brought into the standard risk framework that the companies have for their standard wells. It's more of an audit process. In Queensland there's all the requirements on existing producing and abandoned wells. As to sampling and monitoring to see whether the integrity has been maintained that's probably focused on producing wells but it does cover abandoned wells or wells that have been shut in.

I think in that slide I indicated the fact that the wells are marked so that they're easily identified; that's part of that process in being able to undertake the long term monitoring. That extends for a number of years to ensure that the cap has been set properly. If you were to see a failure it would be within those first few years. Once that integrity is maintained, that's when you start thinking about the longer term integrity. There aren't very many standards internationally or within Australia that deals with long term monitoring of abandoned wells over 50, 100, you name it, years.

I think that is something that we need to look at in more detail. We'll provide some more information in our written submission on how that looks.

Dr Alan Andersen:

Thank you. My final question refers to the social licence to operate. The panel had a presentation yesterday to the effect that often the social licence is not directly related to evidence. They gave an example of how now the existing land use clearly has a lot of environmental risk, causes environmental damage but still has a very strong social licence to operate. The question is, why is there such public concern do you think over onshore gas? Yes the panel acknowledges that there is a strong activist movement but it goes beyond that. Why do you think that is such an issue for the industry?-

Keld Knudsen:

Can I ask what the other industry was?



Dr Alan Andersen: Pastoralism.

Keld Knudsen: Pastoralism?

Dr Alan Andersen: Sorry, it locks out people from vast areas, mostly large degree foreign owned, doesn't employ many people, uses vast amounts of water, causes clear environmental degradation and is also a major methane emitter. Despite all those things, it's what the NT is all about. Part of the NT psyche and has a very strong licence to operate despite all that.

Keld Knudsen: I've been involved in many conferences through APPEA and through the oil and gas industry. I think if I had a dollar for every time someone told us how we could fix our social licence operate I wouldn't need to continue working. It is a real challenge and it is a really interesting point to raise that. Just to answer from my experience, when we look at industries like pastoralism and even coal mining and other industries, they've got a very long history of being embedded. Pastoralism in Australia was built on the back of the sheep I think, wasn't it?

We've seen an industry that's grown and to it's credit there's not any other industry comparable that I think of, that has added so much value the Australian economy in such a short time was the onshore gas industry in Queensland. With that comes change. We've seen in a lot of the communities, we've got new infrastructure, we've got new people, there's cars, there's roads. We're learning a lot along the way but I think that effectively quite a rapid change that's happened. If we look in the United States as well, that may be one of the differences between those two industries.

Matthew Doman: The other important point to make is that support for the onshore gas industry is strongest in the areas where it is actually occurring. We see that in Queensland, we see that in South Australia. In fact in Narrabri, the Narrabri area of New South Wales, in the area where Santos is proposing to develop coal seam gas resources, we find quite strong support for that activity in the actual community. The further away you go from the proposed area, that support diminishes.

I think it is the case that where people see the industry, see the benefits and have an opportunity to regularly engage, get information that they need and come to understand the industry, that support for our industry is quite strong. In areas where it is not yet established there's a combination of genuine questions and concerns, uncertainty, lack of familiarity, the concern that the existing industries won't be negatively impacted. All those concerns are very understandable. That is overlaid with some very aggressive and well organised campaigns against fossil fuels development, often masquerading under farmer's rights umbrellas. That makes our task more difficult but it doesn't make it any less important. We're committed to doing a better job of working with the community, responding to their concerns and hopefully building support for our licence to operate moving forward.

Hon. Justice



Rachel Pepper: I want to say we've been to Queensland recently we were in Chinchilla, sorry we've spoken to land owners in Chinchilla, in Roma, in Dolby, we spoke to land holders there. I'm not sure that you have the unqualified support that you have just indicated. Certainly I know Narrabri my partner was there recently. She reported back on seeing many yellow triangles. I'm just not sure that what you've said is correct.

Matthew Doman: I'm not sure the yellow triangles ought be taken as a barometer of community sentiment. We have many examples of farmers who've had yellow triangles put on their fence by others. I think the evidence from, there's a group in Narrabri, the so called Yes to Gas the ... movement started of its own volition. Represents the community who's supportive of development in that community who are frustrated by people from outside the community presenting views that, purporting to be from the community, opposing the project.
In Queensland I think there's a study, I haven't got the date reference in my head. CSIRO wrote a report on community attitudes in Queensland that showed a range of attitudes toward our industry. From, if I recall it, 10% opposition. Then a range of attitudes varying from tolerance to acceptance to support. I think that is reflected in the experience of talking to people in communities like Roma or Chinchilla.

Hon. Justice
Rachel Pepper: We've seen that data. Again, we had presentations from CSIRO from university of Queensland and that's not what that data revealed. That data revealed in many cases 50% or more had an unfavourable view of your industry. Let's just for hypothetical purpose's sake assume that you have no social licence to operate in the Northern Territory, how do you gain it? What are your suggestions for gaining it?

Matthew Doman: I think we have to participate in the public discussion of the industry. We have to explain both the type of information that we're covering and our submissions to this enquiry. We have to explain first of all the overriding point of why should there be the development of another industry in this economy and the benefits that will flow from that. Giving people information, trying to balance information around our activities, the proven record and science of our industry. We need to do that both through the media, through social media and also through face to face contact with people right across the community.

The companies that are proposing the development in the Beetaloo Basin are very much doing that as we speak. As an industry I think we need to do more of that as a broader community. We've been mindful this year of not continuing the level of advertising for example that we were doing last year partly out of respect for this Inquiry. We're looking forward to the resolution of this Inquiry and returning to more fulsome engagement in community advocacy in the near future.

Hon. Justice
Rachel Pepper: That depends what the outcome of the inquiry is. Are you not pre-supposing the outcome of this Inquiry?



Matthew Doman: I should say, we may in fact find that the end point of this, the government decides for a permanent ban on fracking in the Northern Territory. If it does that there will be no industry. We will presumably therefore have less advocacy and the industry and investors in the industry will move on to other areas.

Hon. Justice
Rachel Pepper: If you do have any survey results we'd be very appreciative of that information obviously from here. I would be surprised if you haven't undertaken that work already. Elsewhere just as we are not accepting anecdotal evidence of community support against fracking, likewise we'll not support anecdotal evidence of support for fracking.

Keld Knudsen: Justice Pepper if I just, we could just add to that. Maybe when you're in Queensland and you might have had an opportunity to talk to Agforce-

Hon. Justice
Rachel Pepper: We did.

Keld Knudsen: -which is one of the leading organisations in Queensland representing that sector. They do a series called engagement seminars to deal with how land holders can approach working with the oil and gas industry. They do a survey every year or for every session. We're not denying, there's more work to be done. They're seeing some very positive outcomes in Queensland particularly in regards to the trust that we're holding. That they have for the industry or the industry is, they're doing what they're saying. There are some positive metrics and we can follow that up with Agforce.

Hon. Justice
Rachel Pepper: We have that information as well. We did speak to Agforce. Again they fully acknowledged that their survey was incomplete and so far as it was only a survey of their members and those members who bothered to fill out the survey form. Professor Priestly.

Professor
Brian Priestly: My question also relates to this lack of social licence to operate. Since it's been partially answered I might focus on one element of that. Which I think contributes to the lack of that social licence. That is a fairly consistent perception of distrust in the regulatory ..of the Northern territory government. You've commented on the regulatory reforms, they're in place. You haven't commented upon the resources that are needed to implement those reforms and so on. I wonder how you would, as an industry, respond to this fairly general lack of trust in the community on the regulatory system for your industry.

Matthew Doman: I think it's true. Right across the country on a range of issues including but not just including our industry, there is a lack of trust in government and in regulatory systems. That's not conducive to resolution of some of the issues that we're talking about today. I think in the Northern Territory we've seen that the distrust in government was even significantly higher. That without becoming a political commentator, was very much to the fore in recent years. I think we're seeing some stabilising in attitudes towards government here in the Northern Territory.



I think that's to be hoped for. It's, I don't think in anyone's interest for ... At the end of the day we absolutely accept that the government owns the resources that we seek to develop. The government will make a decision about whether those resources are developed or not. The government will regulate the manner in which those resources are developed and will have oversight of our performance and whether we meet those regulatory standards.

It is of concern to us if the government is not held in high regard or there is a community view that the government is not capable of doing those things. We think that that's an unfair view of the Northern Territory Government's existing capability. We also acknowledge that if the increase in activity that we believe is possible subject to government approvals and decisions that will stem from this inquiry, there will need to be an increase in the resources of the government to appropriately regulate our activity.

We'd be supportive to the extent that we can, facilitating that strengthening of resources.

Hon. Justice
Rachel Pepper:

Yes, professor Hart.

Professor
Barry Hart AM:

Just following the ... trust or mistrust. We've had a number of submissions ...suggesting that one line of address if this is the establishment of an independent organisation. Could you just give us an idea of APPEA's thoughts about that desirability scope, who would pay for it?

Matthew Doman:

I think the one which comes to mind is the Queensland GasFields Commission. Keld has worked more closely in Queensland than I have so I'm going to ask Keld to make some observations.

Keld Knudsen:

The GasFields Commission is not an independent regulator but do provide oversight to an interface between government to a certain extent in the land holders. I haven't really looked at the potential model in the NT as far as whether it's an independent regulator or whether it's one that has its own functions listed within the Department of the Environment or the Department of Mines and Petroleum. Seems pretty clear that it does need to be well resourced and that is appropriate.

We see that across regulations across Australia as far as the need to have well resourced regulators that they have not only the money to do their jobs but also the technical expertise. As far as I'm aware the Northern Territory Government has been quite focused on making sure they have that expertise. I don't think APPEA has a position whether there needs to be an independent standalone regulator that has its own authority or whether there's one that's listed within the department but effectively functions on its own.



I know in other jurisdictions we've got mixes of those. Offshore we have an independent regulator under NOPTA and NOPSEMA for both titles and environmental decisions. At the federal level we have environmental decisions under the EPBC Act that's nested within the Department of Environment. There's appropriate structures as far as accountability and probity. I think either could be an option. It just depends on how the government wants to progress it.

Hon. Justice
Rachel Pepper:

Where would the resources come from for this new and improved body whatever it may be?

Keld Knudsen:

It certainly is a challenge that we see across all jurisdictions as far as how do we fund regulatory functions. Most of the time when we look at the offshore regulator for instance, that's a cost recovered system and it's based on industry activity. The difficulty we have in a full cost recovery system in an industry that's quite small is that there may not be the funds on an activity level in order to be able to fully resource it.

When we see the activities of our industry in other jurisdictions, there is partial cost recovery plus a mix of public good funds and there is some public good elements in making sure that any industry is efficiently regulated with solid oversight. Certainly that is a question that all jurisdictions grapple with particularly in an industry that is relatively small in scale. At a future point if the moratorium lifted and the industry is bigger that might be a different question.

Hon. Justice
Rachel Pepper:

It would be good to get some assistance on APPEA on what a regulatory bottle you think would be appropriate for the Northern Territory given that you've agreed that there work to be done in terms of regulations is never done. Indeed what that would look like and how it would be funded.

Adam Welch:

Justice Pepper can I just add, my comments before around the status of the regulatory reform process. Just want to clarify that we believe in APPEA, that the current regulatory environment is satisfactory for the next stage of the industry's development around continued exploration. Yes, there will need to be some more regulatory reforms to underpin our development phase. I'd also like to commend the Productivity Commission report to the panel. The very discussions you've asked us to comment on have detailed explanations spelled out in that report even to the point of South Australia having a very passionate analysis, evidence put forward around why they have a single regulatory body system there. Also looking at the Western Australian onshore system. That particular Productivity Commission report was the foundation for adding well integrity to the, what was formerly the National Offshore Petroleum Safety Authority. It's a very very good report for the panel to have a look at.

Hon. Justice
Rachel Pepper:

I'm grateful for that and we have regard to it, thank you. Dr. Beck, thank you.



Dr Vaughan Beck AM: A couple of questions. Firstly with regard to the claims that Australia is awash with gas. There was some reference to reports, the Aima report 2019 to 2024 and an international report 2012 to 2022 saying that there is adequate supply or finally balanced. Given that any development in the Northern Territory in terms of large scale production would not occur until after those end dates that I quoted, panel would value contributions and written contributions from APPEA that looks at the original claims that Australia is awash with gas.

That was based upon an analysis of some data. We would then value the industry's perspective on what the outlook for gas is beyond 2022 or 2024. Which the two reports you used in referencing up on the presentation. We'd like some full written response as to what the industry sees as to the gas outlook beyond those time frames and aligns with the more full scale production from any gas developments in the Northern Territory. Will do?

Matthew Doman: Happy to provide that.

Dr Vaughan Beck AM: Thank you very much. In terms of a comment in respect of greenhouse gases , it was made an observation on the slide effectively saying that CSIRO's measurements of the calcium gas confirms the accuracy that the emissions are much lower than in the US. That comment also aligns with some comments that were put in the APPEA submission ... That was referencing a report by day 2017. I've had a look at that report by day 2017. APPEA in the written submissions to this panel quoted low emissions, I can't remember the figure.

They were about .2% I'm not sure. We're representative of a couple of hundred kilograms of methane emissions per vent. When I looked at the report, that was based upon emissions attached to some unloading phase. ..some CSIRO emissions. CSIRO also did some measurements for work ...and the actual figure quoted by CSIRO was of the order of 20 plus tonnes of CH₄. That wasn't mentioned in the APPEA submission. To give credit to the CSIRO report. They articulated it but APPEA didn't reflect it. Your claims that the gas emissions are low don't bear up to scrutiny in terms of what CSIRO had to say.

CSIRO did not do any measurements of the emissions during hydraulic fracturing. The characterization that CSG emissions are much lower than US I don't accept and I'd like commentary from APPEA on that based upon a more wholesome appraisal of the CSIRO report. Also on the data that we presented in our submission which is based upon the latest results from the US which are from the national energy technology laboratory. They do comprehensive measurements at points and at field level.

Those results indicate that methane emissions are ... This is across the US whole gas field, are of 1.7% and they range from 1.3 to 2.2%. I'd value some commentary on that. I also note you made reference to the department of environment and energy in terms of the inventory. I acknowledge they've been updated. Also not that they are for inventory purposes and not for



measuring actual performance. The panel would value commentary on the proposal for both baseline measurement and also ongoing measurements of methane from gas fields. Look forward to some commentary on that as well.

Matthew Doman: Thank you. We'll take that on notice and certainly provide a response. We recognise that part of that was in the written request for further information, yes we will definitely do that.

Hon. Justice
Rachel Pepper: Dr. Ritchie, yes.

Dr David Ritchie: Thank you. Just going back to the question that we were dealing with before. In your introduction you did say that one of the exciting potentials of this industry was to alleviate the shortfall in the East. Understanding that we don't know what the price is, do you have an idea of what the price would have to be in the current market for it to be able to be a significant ... Affect the Eastern market at all?

Adam Welch: APPEA is not privy to the price or the commercial discussions that companies undertake.

Dr David Ritchie: you know what the price in the East is now. You must have a view what it would have to be produced at in today's environment to be competitive.

Adam Welch: One example that we'll provide in our submission is a chart that will look at the US experience on gas prices, drilling activity and production levels. Which is a clear indication of a reasonably well functioning market working. If I could visually draw the chart for you, you've got prices heading up into the 10, 11, \$12 Mmbtu range in the 2010, 2009 period. Subsequently drilling activity following that so a large spike in drilling activity. That clearly bought on a number of new reserves and then the reserve's level was being produced and you see the price come down quite significantly to where it is today to the three to four dollar or even down to the \$2.50 range.

That's a clear example of a well functioning market where price signal has introduced new drilling activity, new production activity. Clearly at the level of production activity that goes underway has economies of scale effect to it. Therefore the drilling becomes more productive, the services become more efficient and therefore overall the industry cost base comes down. Therefore those companies are still able to produce at two dollars, three dollars a unit and still making some healthy profit.

Dr David Ritchie: Thank you, just on that, would you characterise the Australian market as a well functioning market at the moment?

Matthew Doman: From what we've seen, we've seen quite an amount of analysis of the poor functioning of the Australian market at the moment. I think to a large degree that is from our position, the restraint on the development of new resources to feed supply into that market. There's been work on the transparency or lack of transparency in the market that the Australian Energy Market Commission and others have done. We've broadly supported



that initiative. We need greater transparency in the market. We're also in a discussion which is as political as the current discussion around gas is in Australia.

There needs to be some analysis of all the claims that are made, analysis of our claims about supply and restraints on supply. There needs to be analysis of some of the claims that are made about lack of gas and about the prices that are being asked. Some of the commentary we see in the public domain often doesn't experience the reality that we believe we see or at least our members see. APPEA doesn't buy and sell gas nor do we actually produce gas. Our member companies do that ad subject to confidentiality and other commercial constraints.

Sometimes we might not be the best commentator on those questions but broadly I think we see a market that could be is not functioning well and for a whole range of factors.

Dr David Ritchie: Thank you. The reason I ask is actually just as a context of this next question. I think you also said in your introduction that with effective regulation we could have a safe and productive industry in the Northern Territory. When we discussed this with Santos, they made quite a strong point that the cost structure of the industry here would not bare too much regulation. That they couldn't, they didn't want regulation that would then, I think their words were, stifle or kill the industry because of imposed costs. Do you have a view on that?

Matthew Doman: Certainly there's a point at which, the whole question is linked back to the social licence or the level of community support. The community needs to know that the activity that we're undertaking has been adequately regulated, that assurances from us that we have got a strong track record and can operate safe and sustainably are not enough. Clearly there needs to be regulation. There is also clearly a point at which the regulatory burden impacts the commerciality of our industry. One of the judgments before you is to make a judgement of what are the real risks, what are the genuine risks that need to be addressed, regulated, monitored?

Which of them can we have some comfort from the track record of the industry or the acceptance of the science that this would be beyond what was a reasonable level of regulatory activity.

Dr David Ritchie: All right. Being specific, one of the things that's become pretty apparent to us is that to be effectively regulate we need sound baseline studies done. Do you see that imposing the costs of those on the industry would be a step too far?

Matthew Doman: I think there is the baseline studies that are currently being undertaken. I've been out of the country for a while, I stand corrected. Have been funded by the industry proponents. We accept that those baseline studies are necessary. I guess the overall position is that the state or in this case the territory owns those resources and will make decisions about whether the



development of those resources goes ahead. Then we'll share in the benefits of the development of those resources. We believe that there's appropriate cost sharing in many areas but the industry has a contribution to make.

Dr David Ritchie: Thank you. Just to go on another issue. I think you said that there were 50 access land agreements already in place in the Northern territory. I'm assuming that some financial, there'd be a financial component of those. Would that be reasonable to assume?

Matthew Doman: They have, all of them have compensation for impacts of our activity in those agreements. I can't speak to the individual agreements which at the moment do-

Dr David Ritchie: We understand that. I suppose my question is, and I think you've partly answered it. You would see then as an industry, that those payments are a compensation for loss of amenity or some sort or another being experienced by the most cases either the traditional owners or the pastoral licensee. Is that correct?

Matthew Doman: Keld, do you want to speak to it from a Queensland perspective where we have a very large number of agreements in place?

Keld Knudsen: Thanks Matt. Thanks Dr. Ritchie. The conduct and compensation agreements are not, the way they're handled in Queensland so I can't speak for the NT. I'm not familiar with the conduct and compensation agreement here.

Dr David Ritchie: I guess I'm interested more in just what you as the peak body think is the best way of doing it as well as also hearing the actual examples from areas.

Keld Knudsen: The conduct and compensation arrangements in Queensland cover a wide range of the potential impacts on the land holders. Not just what there might be a lost productivity from additional tracks through productive land. Sorry. Through productive land. It also takes into consideration land holders time in negotiating access as well as visual amenity and a whole range of things. When it's been put to land holders whether they think it's adequate, the majority say that they do think that the compensation agreements in Queensland are fair.

I think if we asked anyone whether they'd want more money I think most of them would probably suggest that they would. It's a pretty good barometer I think of whether the agreements in Queensland are hitting the mark. We've got 5,000 agreements now. As I think we put on the slide earlier, there's about 2,100 of them that are hosting active activity. The others may be hosting a pipeline that's already been completed or are yet to be developed. Certainly in our engagements with peak bodies in Queensland, it seems to be hitting a pretty decent spot. Covering a range of activity.



Dr David Ritchie: Thank you. Yes, I think the question in my mind is if it is a compensation, there's got to be a way of assessing what the loss has been that you're compensating for. Some of the losses are subjective. In the Northern Territory where you'll be dealing with possibly the loss of amenity with a completely cross culturally. You're dealing with traditional owners. I'm interested in how you see that would be calculated and more particularly how it can be transparently calculated.

Keld Knudsen: From our experience in Queensland each of the conduct and compensation agreements is definitely unique to that individual and that arrangement with the land holder and the company. In some cases a land holder will have three or four conduct and compensation agreements across their property. There may also be one with the land owner and the occupier. There's quite a range. I guess what I'm trying to indicate is that they're really specific to the situation and the individual group. When it's been tested previously and it's been looked at from a calculative perspective, it tends to figure really based on the previous land use.

Then there's calculations that are undertaken to work out what the change in the land use might be. They've come up with a dollar figure at the end. You're absolutely right, the subjective nature of amenity, your use of the property, it does vary. I'm not sure if there's a calculator but certainly we can take that on notice and come back to you and provide some more information.

Dr David Ritchie: Thank you. I gather from what you were saying before that you would welcome us commenting on a more transparent system for doing that?

Keld Knudsen: For conduct and compensation agreements?

Dr David Ritchie: Yeah.

Keld Knudsen: I don't think there's any concern with that.

Dr David Ritchie: Thank you.

Hon. Justice
Rachel Pepper: Yes, Professor Hart.

Professor
Barry Hart AM: Could I just follow up on your agreement that there is still a need for baseline studies to be undertaken? Could you comment on whether you see that these baseline studies should be done before development proceeds further?

Matthew Doman: I think what we have said is that we support monitoring of water resources before, during and after activity. The reality is that the substantial impacts will come in the development phase of our industry when a larger number of wells are drilled. During the exploration phase the water impacts are very minimal. In fact we're getting quite a bit of information on the water



resources through the exploration drilling activity. That's one of the things that we do. We are supportive of baseline water studies and advancing them as much as we can before substantial development activity occurs.

Professor

Barry Hart AM:

I'd have to say though that if that's what you think is a baseline study, it's very limited. We're seeing baseline studies as broader than that. You mentioned nothing at all about terrestrial, the aquatic systems, it's all about how much water is there and it's quality. There's more components to baseline studies than I think you're suggesting there.

Matthew Doman:

I can take that on notice and see if we can provide more information on the extent of that sort of thing.

Professor

Barry Hart AM:

Just one last question, a more of a, I suppose technical one. This is with regard to abandoned wells and their security if you'd like. That there'd been studies you were going to provide us with the reports of someone who had done some studies that purported to indicate that cements would retain their stability for 10,000 years. I'd be very keen for you just to give us a summary. I think you used the word modelling. Obviously they haven't studied it for 10,000 years. Can we be confident that that information is believable?

Keld Knudsen:

I think the key that I was trying to present is that well integrity over the long term is more about the integrity of the plug and the placement of the plug and the mechanical placement of the plug. When we looked at the long term integrity, those studies that mentioned undertook laboratory tests on the type of cement and then put them under extreme conditions, corrosion conditions including CO₂ which is quite a heavy corrosive. Then they modelled it out and then they tried to make some assumptions based on what they saw as to what the potential corrosion might be of the cement for instance.

Their conclusions in that report found that even after 10,000 years based of course on the size of the cement plug, that the corrosion wasn't sufficient to have actually caused a failure in the integrity of the wells. I'm not sure if I'm explaining that very well.

Professor

Barry Hart AM:

No, I understand.

Keld Knudsen:

They did a linear test on the steel which is effectively, could be actually an easier scenario than the cement and then they modelled, they did lab tests and followed that out in a modelled scenario to see how long it would take. Even after that 10,000 year scenario they didn't see the cement at that plug, as long as it's placed mechanically sound, they didn't see any potential breach.

Professor

Barry Hart AM:

Okay, we'll look forward to the report.



Keld Knudsen: Absolutely. Most of the works being done recently has been around CO₂ in the long term storage of carbon capture and storage projects. We can extrapolate that across because it's actually a more extreme situation than we'd see in an under pressured environment with a shale gas fuel for instance.

Professor
Barry Hart AM: Thank you.

Hon. Justice
Rachel Pepper: One last question. Your organisation unsurprisingly are Santos in origin. You've all I suppose cautioned against overregulation, I think you used the word reasonable regulation. Which is what origin used. Overregulation was Santos'. You would accept, wouldn't you, given the complete lack of trust that has been expressed to us by people who have fronted this enquiry that perhaps overregulation may just well be the price that the onshore unconventional gas industry has to pay in order to gain a social licence?

Matthew Doman: Look, we don't regulate ourselves, that is a role for government and they will take advice from your panel and other sources in determining that regulatory regime. Our industry will then have to make a decision about the economics of operating in this case in the Northern Territory. The cost of regulation will impact the viability of development here. That should be heard to be arguing for minimal regulation and certainly not for inadequate regulation. We know that wherever we operate we will be regulated.

We need to be regulated to a level that gives the community confidence that we're going to be operating safely and we're going to be called to account if we don't. That we can't be successful without the community having confidence in the regulatory regime. The caution is sounded in relation to regulatory burden and the cost of regulation and the necessity for individual regulatory action. At the end of the day, once the regulatory regime is in place, our members will have to make decisions about the cost of regulation and how that affects the commercial development prospects of the projects.

I think we see in Queensland and in South Australia, states with a long history of onshore gas activity, a long history of regulating those activities. There are some complaints from our industry from time to time about aspects of regulation in both the states. The regulatory regimes have enabled and facilitated commercial development. We hope that that's the point we land in the Northern Territory.

Hon. Justice
Rachel Pepper: Indeed even in Queensland, again this was told to us frankly by many of the regulatory agencies that we spoke with. That there was regret that tougher regulation was not put in place before that industry developed in that state.

Matthew Doman: Not sure I have a comment on that.

Hon. Justice
Rachel Pepper: Again, all of you, all three gentlemen on APPEA, please thank you very much



for coming here today and answering many questions, giving us a presentation. We will chase down certainly some of those extra references, they are of huge help. You'll probably get a letter from us just putting in writing some of the extra questions that we have asked you that you have taken on notice. I didn't do so early which is a remise of me but I apologise for being late. The plane was late, some things you can't help. We're very grateful for your patience and we're grateful for you appearing again in front of the enquiry and engaging with the enquiry. Thank you very much.

Matthew Doman: Thank you.