REPORT OF PROCEEDINGS BEFORE

GENERAL PURPOSE STANDING COMMITTEE No. 5

INQUIRY INTO COAL SEAM GAS

CORRECTED PROOF

At Sydney on Thursday 8 December 2011

The Committee met at 9.30 a.m.

PRESENT

The Hon. R. L. Brown (Chair)

The Hon. J. Buckingham
The Hon. R. H. Colless
The Hon. G. J. Donnelly
The Hon. S. MacDonald
The Hon. Dr P. Phelps
The Hon. P. T. Primrose

CHAIR: Welcome to the fifth public hearing of the General Purpose Standing Committee No. 5 inquiry into coal seam gas, which is examining the environmental, economic and social impacts of coal seam gas activities in New South Wales. Before I commence I acknowledge the Gadigal people who are the traditional custodians of this land. I also pay respect to elders past and present of the Gadigal nation and extend that respect to other Aboriginals present. Today we will hear from a number of key stakeholders, including the Local Government Association of New South Wales, Shires Association of New South Wales, the Environmental Defender's Office, community group representatives from Sydney and the Illawarra, individuals from the Richmond Wilson Combined Water Users' Association and companies involved in coal seam gas mining, as well as other interested stakeholders. In addition to today's hearing, the Committee will hold two more public hearings: one at Mittagong tomorrow and the other here at Parliament House next Monday. The details of those hearings can be found on the Committee's website.

Before we commence I will make some brief comments about procedures. Copies of the guidelines for the broadcast of proceedings are available from the Committee secretariat. Under the guidelines members of the media may film or record d Committee members and witnesses. People in the public should not be the primary focus of any filming or photography. I remind media representatives that you must take responsibility for what you publish about the Committee's proceedings. It is important to remember that parliamentary privilege does not apply to what witnesses say outside of their evidence at this hearing. I urge witnesses to be careful about any comments they may make to the media or to others before giving or after completing their evidence. Those comments would not be protected by parliamentary privilege if another person decided to take action, for example, for defamation.

Committee hearings are not intended to provide a forum for people to make adverse reflection about other persons. The protection afforded to witnesses under parliamentary privilege should not be abused during these hearings. I request that witnesses focus on the issues raised by the terms of reference of this inquiry and avoid naming individuals. In relation to audience comment, the Committee is aware that people hold strong views about coal seam gas development. There is a great deal of interest in the issues being examined by the Committee, as shown by over 1,000 submissions and form letters to the inquiry and the constant radio barrage we hear. The primary purpose of this hearing is to give individual witnesses an opportunity to give their evidence before the Committee. Although this is a public hearing, it is not an open forum for comment from the floor. Only questions from the Committee and the evidence of witnesses are recorded in the transcript. Audience interruptions are not recorded and may make it more difficult for witnesses to fully express their views. Witnesses are advised that any documents they wish to table should be given to the Committee secretariat. The transcript of these proceedings will be available on the Committee's website in the next few days. Finally, I ask everyone to turn off their mobile telephones. If anyone wishes to make or take telephone calls I ask them to go outside to do so.

ADAM MARSHALL, Vice President, Shires Association of New South Wales, on former oath:

KEITH DAVID RHOADES, State President, Local Government Association of New South Wales, and Mayor of Coffs Harbour, sworn and examined:

CHAIR: Prior to commencing questions, would either or both of you like to make a brief opening statement? If your opening statements are extensive I ask that you précis them and then table them for the record.

Mr RHOADES: I will make an opening statement; it is not extensive in time. Firstly, I thank General Purpose Standing Committee No. 5 for the opportunity to address it. I also acknowledge the traditional custodians of the land on which we meet and pay my respects to their elders both past and present. I apologise for Councillor Ray Donald, the President of the Shires Association of New South Wales, who has a commitment in western New South Wales today but Councillor Adam Marshall, Mayor of Gunnedah and Vice President of the Shires Association of New South Wales, is ably with me. The Committee met Councillor Marshall previously at the hearing held at Narrabri.

Together the Local Government Association of New South Wales and the Shires Association of New South Wales represent all the 152 general purpose councils in New South Wales, the special purpose county councils and the regions of the New South Wales Aboriginal land councils. The associations represent the views of these councils by presenting councils views to government, promoting local government to the community and providing specialist advice and services to our member councils. I am happy to answer any questions the Committee may have about the associations following this presentation.

The expansion of the coal seam gas industry in New South Wales and Queensland has generated a great deal of public debate, controversy and community concern. At the same time, the associations recognise the considerable pressures on the State Government to exploit this major resource. We see this inquiry as an opportunity for all stakeholders and communities to provide input into how New South Wales can balance social, economic and environmental objectives of coal seam gas mining. The focus of the associations' submission has been in response to paragraph 2 (e) of the terms of reference of this inquiry:

> 2. The economic and social implications of CSG activities including those which affect:
>
> (e) Local Government including provision of local/regional infrastructure and local planning control mechanisms.

The associations' submission focuses on the key issues for local government and their communities that are critical to the future of planning and preparing for the balanced economic development of the regions.

Water is the largest and most obvious concern which needs to be thoroughly assessed and have appropriate regulations put in place. This relates both to the protection of water aquifers and the management of the water extracted in the process of securing the gas. We also highlight the importance of valuing the long-term returns of agriculture as opposed to the relatively short-term one-off returns from mining. The value of these other land-use activities must be factored into decisions about how and where mining should take place. Preservation of high-quality agricultural land must be a major priority of any long-term strategy to manage the expansion of the coal and gas industries.

Other issues of particular relevance to local government covered in our submission include the assessment of cumulative impacts particularly on social and community services, housing supply, the labour market, infrastructure transport impacts and seeing a share of mining royalties returned to those regions. Local government needs additional sources of revenue if it is to address infrastructure funding shortfalls and to remain financially viable. A permanent share of mining royalties would provide one such source and the associations advocate the establishment of a royalties for regions scheme, incorporating the resources for the program with two funding pools: first, for local government generally to help address the identified infrastructure renewal backlogs, and, second, to help address the major impacts that mining has on the communities surrounding the mine sites. For example, damage to roads and the environment and increased demand for infrastructure and services.

The associations are advocating that industry and government adopt a precautionary approach to decisions about new mining exploration and production licences until and unless the environmental risk, particularly to the water resource, as well as social and economic impacts, has been assessed and we can ensure that these cumulative impacts can be carefully and effectively manage. Further, while we recognise the

economic benefits of coal seam gas for our regional communities, we maintain that any commitments to coal seam gas operation should not be supported until a proper process to assess all impacts has been carried out, adequate provisions and resources have been made to meet stringent environment and social expectations and intensive community consultation has taken place. In regions that are currently the focus of potential coal seam gas development, such as the Gunnedah Basin, it is not too late to ensure that this development occurs more strategically to ensure that any negative impacts are mitigated and our communities can take maximum advantage of the opportunities presented. Thank you.

CHAIR: Councillor Marshall, do you wish to add to that?

Mr MARSHALL: Not at this time, thank you.

The Hon. GREG DONNELLY: I refer you to the first paragraph in the conclusion to your submission, which reads:

> One of the main issues for Local Government that has been raised in this document in relation to coal seam gas exploration and development relates to a greater need to determine the cumulative social and economic impacts of resource developments at a local level. There is a need to undertake community impact and social impact assessment prior to the exploration approval being issued and a need for a higher level of community and landholder engagement.

In terms of this determination of "cumulative social and economic impacts of resource developments at a local level", are you aware of any models or case studies perhaps elsewhere in other Australian States or overseas where some solid work has been done around modelling the impacts of this sort of development?

Mr MARSHALL: Yes, there has been some extensive work done, especially in the Surat Basin in Queensland, on the very question of how do you properly assess cumulative impact? How do you put some intellectual rigor behind that statement? How do you actually turn that into action? That has been done by a number of councils up there partnering with some universities. Some research projects have taken place. I know that some of our member councils in the Gunnedah Basin region have been trying to tap into that through their regional organisation of councils. We have had a number of presentations from them trying to find a way to properly view resource development on a regional scale looking at cumulative impacts rather than the traditional approach, which has been on an application-by-application in isolation basis.

I think we have moved well beyond that way of assessing impact on the site itself and looking at an individual application. Every application has impacts across a local community and across a region, and those impacts are cumulative. If there are already three projects in existence and a fourth one comes along then it needs to be assessed not just on that project's potential impacts but on what impacts that then has on the four projects and the impact it has on the region. Each region has certain thresholds, whether they are environmental, social or economic. It could be that that project actually tips the region past some of those thresholds.

A lot of work has been done on resilience modelling in communities around cumulative impact. That has been done not just in the Surat Basin but there are organisations such as the Naomi Catchment Management Authority that are working very hard on that very issue about resilience modelling. You have a data set into which you can plug in a number of scenarios that would emanate from a particular coal seam gas project, for example, and be able to measure whether it touches any of those theoretical thresholds as a result of the presence of that project in combination with the others that are there. I am sorry, I have probably given a very lengthy answer, but essentially there has been a lot of work done by a lot of universities and, as far as we are aware at the moment, the Surat Basin is one in particular, off the top of my head.

The Hon. GREG DONNELLY: I wonder if you would be prepared to take on notice providing us with the references to that research? All of us would probably find it helpful to look at that in due course, so if you could provide it, that would be good.

Mr MARSHALL: Certainly.

The Hon. GREG DONNELLY: The next sentence is about the need to undertake community impact and social impact assessments prior to exploration approval being issued. Do we take on face value what is said there, that in fact there would be no exploration until this work is done and a satisfactory understanding is developed, and I suppose then decisions made about whether or not to proceed? Is that the way we should take it?

Mr RHOADES: We are, to use the phrase, between a rock and a hard place. Communities in this era expect to know a lot more, through community consultation, on issues affecting those communities—more so now than they ever did 20, 30 or 50 years ago. They were a given then, but now they are not. At the end of the day, we have to make sure that all aspects, whether it be what we are here for today or whether it be the fact that there is an attempt at the moment to reopen an antimony mine in the Dorrigo area which could affect the water supply in my local government area—these things should not happen until such time as all of the Is are dotted and the Ts are crossed. I believe we are now doing that in this process here. The associations are not opposed to the moratorium, but we respect, at the same time, how you find out the effects of what will happen unless you drill a hole. You have to have some exploratory work done somewhere to find out. You cannot just get it out of books and say, "This is what it could be", you have to have the factual evidence to be able to substantiate it. We totally support the extension of the moratorium, but we are not opposed to testing to find out the effects because, at the end of the day, the report that will be handed down must be factual. This is what communities now want, expect and should have across New South Wales.

The Hon. GREG DONNELLY: I understand that point, but I think this is a slightly different point, that is, to undertake community impact and social impact assessments prior to exploration. I am not talking about the drilling and science associated with understanding the potential impact of cross-contamination of aquifers or whatever the case may be, but community impact and social impact assessment prior to exploration.

Mr MARSHALL: Councillor Rhoades was absolutely correct in everything he said, but to answer that specific point there has to be some recognition that there are significant impacts of projects on communities, even in the exploration phase. I guess that is what that point is trying to bring out. Traditionally, we have only done those assessments prior to an assessment of a project application, or rejection, but we are saying that we need to do some of those assessments before you even grant exploration rights, because exploration is very intensive by nature and it has impacts on hard and soft infrastructure and also on communities. It involves a lot of activity; it involves having a lot of people in small and sometimes isolated locations, and in some areas, depending on the location, it can put strain on a lot of infrastructure. So some of that assessment needs to be done even before exploration is granted because exploration, by virtue of its intensive nature now, does have some significant impacts and that will vary depending on where the exploration is being undertaken.

The Hon. JEREMY BUCKINGHAM: The question I have is to Councillor Rhoades, I suppose, just to establish some clarity about the conclusion in the third last paragraph—and I think your submission said the same thing—which says that local government is of the view that any commitments to coal seam gas operation should not be supported until a proper process to assess all impacts has been carried out. Could you expand on what you mean by any commitments? Does that mean development approval? What is the association's view in terms of any commitments?

Mr RHOADES: I suppose it reflects back to my concluding comment a few moments ago about making sure that all the Is are dotted and the Ts are crossed with respect to that. There are potential effects on communities and, before any major approvals are granted, we need to make sure that if it is to proceed—and I use the word "if"—we have done all of the homework necessary to ensure that in the communities that this may affect, and we know that is not all in New South Wales, if it does go ahead, the safeguards are there if needed. We need to make sure that all proper processes have been examined and put into place to ensure that the size of some of the potential projects—and a lot of those are unknown; it depends on what may be there. Is it large scale? Is it small in size compared to the local community, for argument's sake? What effect will it have? I raised some points in my opening address regarding that. If you had a very large major installation project in a very small regional or rural area, yes, there will be impacts, but we do not want to see any major consents or approvals given until such time as all of those works have been concluded.

The Hon. JEREMY BUCKINGHAM: I concur with that and I note your submission that there should be thorough assessment of the exploration phase in relation to coal seam gas, because it seems dissimilar to some mine exploration, but there is a suggestion that the exploration phase looks remarkably similar to the production phase. What is the association's view on who should be doing the initial assessments? Should the exploration phase be the mechanism by which we do an assessment of the industry? Should a proponent-driven exploration phase be how we assess the impact of the industry, or should it be a third party assessing the industry?

Mr RHOADES: I understand where you are coming from, but, as we all in this room realise, local government—the local council—is not the determining authority for the granting of a licence. The conditions of it we can only ask and put to government that all—and, I repeat, all—of those requirements needed in the testing

phase are monitored, examined and reported back to it. How the Government implements that is its decision. The decision of granting by the local council does not come into it. We can only try to the best of our ability to ensure that our local communities are fully aware, fully protected and conversant with what is taking place.

Mr MARSHALL: If I may add to what Councillor Rhoades has said, I do not think it is a question of who should be driving the exploration process or proofing process, rather the more important question I think is: Do we have adequate regulations in place and adequate resources in place? This is from a government point of view. Are there resources in place to adequately police those regulations? We get concerns expressed to us often by some of our members that the days of the past, where we allowed companies to self-regulate or self-police, have come and definitely well and truly gone. The community no longer has the faith in companies to self-police. The Government definitely needs to take a stronger role in making sure that the regulations it puts in place are actually enforced and that companies adhere to those, or third parties adhere to them, or even contractors that work for the Government adhere to them; that there are resources in place to police those regulations; and that the regulations are appropriate and meet community standards, but also meet best practice in terms of environmental safeguards.

Mr RHOADES: One of the known factors in local government these days, and not just local government but all levels of government, is the fear of communities that whoever is the organisation engaged to do the reporting of a project, in other words, the consultants that you use—it is a known fact in communities across New South Wales, and for that fact across this great nation, that whoever has commissioned the consultant, whoever is paying the bill at the end of the day, nine times out of ten will get the report that they want. We believe, as Councillor Marshall has just said, that on this particular issue it needs to be a little bit wider than that to make sure that the policeman has got a policeman policing the outcome, to make sure that no questions come back later in respect of the accuracy of what has been presented as being factual.

The Hon. JEREMY BUCKINGHAM: That is an interesting submission. I take it from what you are saying that, because of your experience in local government dealing with so many proponent-driven developments, your preference is for the assessment of impacts to be done by an independent body, whoever that may be, say the Commonwealth Scientific and Industrial Research Organisation [CSIRO] or another government entity to do that or at least be involved in partnership in that assessment, rather than it being purely a proponent-initiated and managed exploration and assessment phase.

Mr RHOADES: Local government and communities of New South Wales want an open, transparent and accurate report at the end of the day.

The Hon. JEREMY BUCKINGHAM: I understand that, but do you think that that is best provided by a proponent, or a proponent working with another body, say the CSIRO, or completely separate?

Mr RHOADES: I reflect back to my comment that if it needs the policeman to police the police, that is what is needed, but that is a determination that the Government will make. All I can say is that local government and local communities of New South Wales want to make sure that what comes out at the end of the day is exactly as it is.

Mr MARSHALL: Adding to that, there is nothing stopping proponents now partnering with the CSIRO, with universities or whatever contractors or private entities they want to engage, to put their data together to place on the table before Government. Again, I stress that what is absolutely critical is that the Government allocates adequate resources to peer review whatever is submitted to Government for exploration or approval. Whilst I do not know—and none of our members know—the inner workings of the Government, whether there are adequate resources or not, that is a value judgement which the government of the day and members of Parliament such as yourselves have to make, but we would ask that you say very strongly that there needs to be those adequate resources to make sure we peer review, so that what is submitted by any proponent is not simply taken as a given, that it is peer reviewed, it is technically assessed, and the money and resources are provided to allow the Government and its various departments to do that properly. If there was some understanding or some acceptance in the community that that was the case, that may go some way to rebuilding some faith that, when approvals are granted, communities' interests are being protected.

The Hon. JEREMY BUCKINGHAM: In your verbal submission you said that the Local Government Association was not opposed to a moratorium and it welcomed the extension of the moratorium. What is your understanding of the moratorium? Do you believe that there should be a more extensive moratorium—in fact a

moratorium on all activities in the industry—until such time as some of the issues relating to the environmental, economic and social aspects of this industry have been addressed?

Mr RHOADES: I suppose the best way to sum that up is to ask how long is a piece of string. Correct me if I am wrong, but I believe the moratorium has now been extended to the end of March. What work will be done at that time is unknown. However, if the findings have not been completed, the only position the Government can take is to further extend the moratorium. To be able to drill, to explore, to find out and to get the accurate data that is required, you have to allow that to happen at the same time. You cannot take it out of a book; you have to find out what it is doing. It has to be based on knowledge collected to come up with the most accurate answer the Government can get.

The Hon. RICK COLLESS: My question follows on from that general line. On page 3 of your submission you refer to the need for proper processes during this stage. Then on page 4 you refer to the strategic regional land use planning process. Do you believe that the strategic agricultural land policy that the Government has put in place is a step in the right direction towards that sort of process?

Mr MARSHALL: Yes, we do believe it is a step in the right direction, but it is a small step and we think there are many to go. We support the Government's approach in relation to strategic regional land use plans. However, we are concerned about what we regard as a failure of sorts to adequately consult on the development of the first two of those plans; that is, the plans covering the Hunter and the New England north west. We appreciate the need to get them out as quickly as possible, but more important than haste is ensuring that those plans are the best they can be, that they reflect the priorities of the region and that they ensure the protection of what the region and the State believe are valuable community and environmental assets.

While we agree that the way forward is through strategic regional land use plans and all the various land uses and we support that approach, we urge that time be dedicated to doing some serious consultation. Unless those plans are embraced and there is a feeling of ownership in those regions you may be heading down the path of another draft Murray Basin plan. People felt it was being delivered from Sydney, it was not theirs, they did not own it and they did not like it. If they feel involved and have some sense of ownership, there is a chance to develop a real partnership between communities, government and the other land users and industries. Local government stands ready to work in partnership, as we always have. We simply want to be involved appropriately and consulted.

The Hon. RICK COLLESS: In terms of the strategic land policy, the agricultural impact statements that you mentioned and aquifer interference regulations, surely we are looking at a work in progress that is heading in the right direction?

Mr MARSHALL: I believe so.

The Hon. RICK COLLESS: I refer you to the 44 petroleum exploration licences granted by the previous Government. Was it an oversight that it approved those licences without taking into account some of those issues?

Mr MARSHALL: I think the member is inviting us to make some partisan political comment.

The Hon. GREG DONNELLY: They are members of the Government over there and we are the Opposition.

Mr MARSHALL: I am aware of that. I think my previous answer and the position in our submission probably answers that question.

CHAIR: That nice try, Mr Colless.

The Hon. RICK COLLESS: On page 7 of your submission you refer to the issue of royalties and revenues. Of course, this issue has been raised with the Committee many times. You refer to the fact that there is a need for local government to have a permanent share of the revenues generated by the mining industry. What form do you believe that share should take? Should it be a hypothecation of the royalty itself, a fee per wellhead or some sort of compulsory community contribution, which you also referred to? What is your preferred model?

Mr MARSHALL: The Local Government and Shires Associations preferred model is the Western Australian Royalties for Regions program, which hypothecates a percentage of the total royalty take and returns it to the regions in which the royalties are collected. It supports those communities which carry the mining costs and gas operations and which are obviously experiencing the heaviest impact or any adverse impact. It is acknowledged that the State benefits from the resources extracted, but the impacts are obviously felt at their peak where that activity is occurring. It is our very strong view, and it is shared by the New South Wales Association of Mining Related Councils, that we should have hypothecation similar to that provided for in the Western Australian Royalties for Regions program.

The Hon. RICK COLLESS: Should those payments, in whatever form they ultimately take, be credited against the mineral resources rent tax that the Federal Government is planning to introduce?

Mr MARSHALL: That question would probably be better directed to the Government. We do not have a formal position on that and have not canvassed the issue. We are not in a position to answer.

The Hon. Dr PETER PHELPS: The real problem facing local government is the externalities created by coal seam gas exploration and production that are not appropriately addressed. You do not have the ability to rate coal seam gas operations, do you?

Mr MARSHALL: That is correct, we do not.

The Hon. Dr PETER PHELPS: Do you have the ability to rate, for example, an open-cut coalmine within your area?

Mr MARSHALL: We do, but within rate pegging, which we canvassed at Narrabri. We are able to separate land used for mining from other land uses, but we obviously cannot do that with coal seam gas.

The Hon. Dr PETER PHELPS: Why would your organisation prefer a hypothecation of royalties rather than, for example, a per wellhead amount?

Mr MARSHALL: Because while ever rate pegging is in place, giving us the ability to rate coal seam gas differently from farmland or business land really does not put us any further ahead.

The Hon. Dr PETER PHELPS: Councillor Rhoades, I will rely on your AFSM to ask you a question. We heard at Narrabri concerns about fire risks that might be posed by coal seam gas wellheads. Have you ever heard of bushfires igniting coal seam gas or onshore petroleum wellheads?

Mr RHOADES: I will first clarify my role. I have been with the New South Wales Fire Brigades, now Fire and Rescue NSW, for the past 38 years, predominantly in urban areas. That does not mean that my experience does not allow for comment. Experience wise, I have not come across that from a practical point of view. My location also does not lend itself to that type of activity. To say yes and no could be misleading.

The Hon. Dr PETER PHELPS: I am wondering whether you are aware of it happening.

Mr RHOADES: I am not aware of it happening.

The Hon. Dr PETER PHELPS: I refer to peer review processes. Would you accept that some people will simply never accept any level of peer review if it comes out with a conclusion different from theirs? For example, a proponent's argument against being peer reviewed by the Land and Property Management Authority might be that it has an interest because it collects mining royalties. Do you agree that there will always be some people who will never accept any level of peer review?

Mr RHOADES: Everyone in this room knows how the role is played out. You are correct; there are people who when they enter the room do not want to sit at the table because they have a narrow view. The Local Government and Shires Associations' view is very open. We sit at the table, we are a part of the process and we ensure that it is correct and fair. At the end of the day, you can still walk away from the table with your agreed position. However, you must sit there, listen and be a part of it and take on board the positives that come from it and use the negatives to try to improve. We must be a part of the process.

The Hon. Dr PETER PHELPS: Councillor Marshall, would you agree that, all things being equal and there being no deleterious impact on the land, diversification of the economic base of shires in New South Wales is a good thing?

Mr MARSHALL: Yes. Essentially it is the aim of all of our member councils, especially in country areas, to diversify our economic base as much as possible. It is similar to an investment portfolio. We want to spread the risk and to have as many strings to our economic bow as possible. That goes without saying. However, the rider is that we do not want to see an industry come into a region and flourish at the expense of existing productive industries. That is where we come back to the strategic regional land use policy of trying to ensure that there is room for everyone. We must first establish whether there is room for everyone and, if there is, determine where they should be located so that they do not affect existing industries. That is the only rider. We do not want to see a new industry flourish and lose two existing industries or to have them diminished, which would in turn have a negative effect and would be counter to our attempts to diverse our economic base.

The Hon. SCOT MacDONALD: Have you had any interaction with your Queensland council association colleagues about their experience? Many people point out that Queensland is probably a few years ahead of New South Wales in this field. I understand that Queensland has not faced any serious issues or environmental setbacks and so on.

Mr RHOADES: As the state president of the Local Government and Shires Associations I also sit on the board of the Australian Local Government Association, which comprises all the association presidents from the States and Territories of Australia. I cannot comment at an officer level about any comparative research that has been carried out. I would have to respond in writing to provide the correct answer. One would assume that all officers do thorough research. I have had no discussions about this issue with my Queensland counterpart, Counsellor Paul Bell, the president of the Queensland Local Government Association.

The Hon. SCOT MacDONALD: Perhaps I can put on notice a request that the New South Wales Local Government and Shires Associations communicate with its Queensland counterpart to establish its experience.

CHAIR: That will not be a question on notice. We can ask the Local Government and Shires Associations to do that.

Mr RHOADES: I make a commitment that we will do so and provide a response to the Committee.

CHAIR: Have you had feedback from you opposite number in Western Australia about how that State's funding scheme works and whether they are satisfied it is working for them?

Mr MARSHALL: Again, we will take that question on notice. I am not aware of the advice we have received. We have a very good understanding of the how the scheme works with the separate streams of direct funding and everyone getting a share of a certain pot and others getting it on a project-by-project basis.

CHAIR: I understand that that scheme is about three years old.

Mr MARSHALL: It certainly is. We have not heard anything negative, but we can provide more detail.

CHAIR: Thank you for giving your time to the Committee. We would be grateful if you could supply answers to questions on notice within 21 days.

Mr RHOADES: That is a given.

(The witnesses withdrew)

JEFFREY OWEN SMITH, Director, Environmental Defender's Office, and

NARIMAN ASPI SAHUKAR, Acting Policy Director, Environmental Defender's Office, affirmed and examined:

CHAIR: Before we proceed to questions from the Committee would either or both of you like to make a brief opening statement? If your statement is going to be extensive could you précis it and table a statement for Hansard.

Mr SAHUKAR: I would like to make an opening statement. Members of the Committee, thank you for inviting the Environmental Defender's Office [EDO] New South Wales to appear today. The EDO is an independent community legal centre specialising in public interest environmental and planning law. Our office combines four main functions: community legal education; policy and law reform; legal advice and case work; and scientific assistance. In recent years mining law has played a significant and growing role across all of these functions.

We hope through our written submission and evidence today that the EDO can assist the Committee to develop recommendations to better regulate coal seam gas [CSG] in five ways. Firstly, the laws that regulate CSG and other mining, the Petroleum (Onshore) Act, the Environmental Planning and Assessment Act and the Mining Act should be driven by the concept and principles of ecologically sustainable development [ESD]. These principles, already acknowledged in many laws across New South Wales, include: applying the precautionary principle; conservation of biodiversity and ecological integrity as a fundamental consideration; intergenerational equity—that is, maintaining and enhancing the environment for future generations; improved valuation of environmental factors such as environmental assets, services and costs; and the polluter pays principle—that those who generate pollution or waste should bear the cost of containing, avoiding and abating it. These principles should frame the new era of mining, planning and development decisions across New South Wales, including in relation to CSG.

Secondly, these laws should improve environmental assessment and require world's best practice. This should include adopting a precautionary approach in the face of uncertainty and improving the independence and rigour of project assessment and approval. Thirdly, we seek laws that are fairer to local communities by improved notification and understanding, public participation and compensation rights. Fourth, our mining and planning laws should ensure effective strategic planning. This should itself engage communities and should properly value ecological services and environmental values as an integral part of triple bottom line assessment. Strategic plans should include protecting high conservation areas and key agricultural lands from CSG, coal and other mining activity. Fifth and finally, the regulatory system needs to ensure more widespread and effective monitoring and enforcement. This is central to better regulation.

We also note the Senate's interim report on CSG in the Murray-Darling Basin and the EDO supports the vast majority of those recommendations. We would welcome a nationally consistent best practice approach to CSG regulation that is based on sound science.

At the request of local communities, the EDO conducts environmental law workshops across New South Wales on issues of local interest or concern. To help those communities better understand the law and their rights the EDO has conducted 10 workshops about CSG and coalmining this year. Our written submission notes some key concerns that local people raised at our workshops. If you do not mind, I will repeat those. They include: lack of notification and consultation regarding petroleum exploration licences; difficulty obtaining information about those exploration licences; concern about environmental, social and economic impacts associated with CSG exploration and production, especially on water, health and property values; confusion and concern about the assessment and approval process and the limited role of landholders in that process; and concern about negotiating access arrangements and the ability to protect properties from damage caused by CSG activities.

Attendance at our workshops and calls to our free advice line are evidence of a problem: that the current laws that relate CSG exploration and extraction in New South Wales are lagging behind community need and expectation, are ineffective and in need of reform. The EDO's key recommendations reflect these concerns. To resolve them we need new guiding principles for development, thorough environmental

assessment, better community engagement, long-term strategic planning and increased monitoring and enforcement.

The Hon. SCOT MacDONALD: Your conclusion states:

> There are sufficient domestic and international examples that document the potential environmental, economic and social consequences of inadequate CSG regulation.

In relation to the domestic examples I think you are drawing on Queensland and you have highlighted two incidents. I do not want to belittle the incidents but in the scheme of things they are not, to my mind, earth-shattering incidents. Is that enough in your mind to put the brakes on an industry that has probably rolled out hundreds of wells, maybe even more, and 130 litres has been spilled somewhere and so on? In your mind is that sufficient to place a moratorium on an industry that is potentially very important for the State and the country and our energy supplies?

Mr SAHUKAR: We believe that where there is uncertainty in the likelihood of potential risks, but there are significant environmental threats or risks of serious damage, there should be precautions taken to properly regulate the industry and, to the extent possible, make clear what those uncertainties are and resolve those uncertainties in order to properly regulate the industry. We feel that because Queensland has had a bit of a head start in terms of the CSG industry being started up, and from other industries overseas, there is the opportunity in New South Wales to make sure that we do get regulation right at this relatively early stage by applying a precautionary approach and making sure that, as we have said, there are effective laws and also effective monitoring and enforcement of those laws.

The Hon. SCOT MacDONALD: How long has the industry been going in Queensland? I think it is about 20 years but I will be corrected on that.

Mr SAHUKAR: I do not have a precise figure on that. I think it started in the 1990s, but I am not sure.

The Hon. SCOT MacDONALD: Are they the only two incidents or even recent incidents that you are aware of?

Mr SAHUKAR: I am not aware of the history in the Queensland sphere so I cannot comment beyond the examples we have raised here. But we have colleagues in other offices, for example in the EDO Queensland, who may be better qualified to answer on the Queensland front in terms of incidents in the past.

The Hon. RICK COLLESS: Mr Sahukar referred to 10 workshops that you conducted over the last few months. Who convened those workshops?

Mr SAHUKAR: As in who requested them or who put them on?

The Hon. RICK COLLESS: Who requested them and who put them on?

Mr SAHUKAR: I do not have detail of specific people in the case of the workshops but the general approach is that we make ourselves available for workshops. It is one of the functions that our education team puts on, which is not my particular team. Those workshops are conducted at the request of community members who are concerned about a particular environmental issue, which may be a mining issue but it may be another environmental issue. We put on a workshop for that community in order to not only address the concerns of that particular individual but they are often calling on behalf of a community that might have been around the table talking about these issues. We can go to one spot in a particular part of New South Wales and talk through what the legal issues are in that particular area of law and give people a better understanding of what their rights are.

Mr SMITH: We can certainly, if it would assist the Committee, provide some more information on that point. The important point I guess is that regardless of where the request comes from—and that could be the whole range of our clients which range from individual landholders to community groups to conservation groups to national groups—those workshops are to be held in public. So once a request comes in and we assess it as a legitimate request and that there will be enough interest in the issues then it would be open to the public and we would advertise it as such and anyone could come along.

The Hon. RICK COLLESS: What form did those workshops take? For example, were there presentations given and who gave those presentations?

Mr SMITH: It is predominantly—I am talking somewhat in the abstract because I am not aware of the CSG workshops, but the classic model is for EDO solicitors to give information about those. On one or two occasions I know that the EDO science team has also been involved in giving some of that preliminary scientific information about how the process works but we certainly do not hold ourselves to be the experts in that area in the scientific field. We would certainly hold ourselves to be the legal experts. On occasion for those workshops generally we will invite other people to present on an aspect of the issue. So it might be an industry representative or it might be a government representative.

The Hon. RICK COLLESS: That is the point I am getting to. What sort of balanced approach or balanced presentations are given in those workshops? Is it purely looking at ways to take the view that the environmental movement wants to stop any coal seam gas and therefore the EDO will facilitate that sort of work, or do you try to present a balanced argument to give both sides of the argument? What we are seeing in this argument is that it has been very one-sided in terms of the anecdotal and emotive issues that surround it. I respect entirely those views, but this Committee has a responsibility to try to look at an even balance of both sides of the argument. This Committee must look at the science, keep the emotion and the anecdotes out of it and look at the facts and get the facts on the table. Did your workshops attempt to give any sort of balanced argument to the people attending those workshops?

Mr SMITH: I would say that the EDO has a long reputation for being an honest broker in those circumstances. We are there to inform the community about what the law is and the opportunities for them to be involved. We are a non-partisan organisation and I do think that across all the areas of our work we do provide that balance. Perhaps more importantly, others believe that we provide that balance as well.

Mr SAHUKAR: And we do try to respond to the concerns that community members raise at those particular forums. So in some ways it is actually audience driven as to what are the particular issues or questions they have about the law and we can respond to those questions.

Mr SMITH: The interest in this issue, as this Committee has no doubt seen, has exponentially grown over the last couple of years so the percentage of not only those requests for workshops but the inquiries that we get—we run a telephone line about environmental law and any person can ring that up on a public or private matter relating to environmental law and the requests in that have gone up, I am told, fourfold in the last couple of years.

The Hon. RICK COLLESS: Are you aware of who attended those workshops in terms of industry people? Were there in fact scientists from industry or government there to talk about the hydrogeological issues and those sorts of things, or was it purely the legal aspects?

Mr SMITH: We concentrate on the legal aspects appropriate to a legal centre. Again I am happy to confirm this through talking closely with our education teams and to refer the information back to the Committee, but, I understand in our Northern Rivers workshops that we did have Government and industry representatives at the early coal seam gas workshops. I am happy to put together a 1- or 2-page summary. When we have individuals it is not entirely clear but if we can provide that information in a generic sense without invading people's privacy—community representatives or rural landholders or however they self-identify—we are happy to do that.

CHAIR: That would be valuable.

The Hon. Dr PETER PHELPS: One quick question: What is the relationship, or is there one, between the Environmental Defender's Office and the Environment Protection Authority?

Mr SMITH: The Environment Protection Authority in New South Wales?

The Hon. Dr PETER PHELPS: Yes.

Mr SMITH: The relationship—

The Hon. Dr PETER PHELPS: Say "none" if there is no relationship.

Mr SMITH: Perhaps that is the answer. The Environmental Defender's Office is a community legal centre that performs the functions of anything from community education, which we have talked about, through the workshops—

The Hon. Dr PETER PHELPS: You do not receive funding from the Environment Protection Authority?

Mr SMITH: Correct. We receive funding from the Environmental Trust but that is not the Environment Protection Authority either in its previous or current incarnation. The funding that we receive from the Environmental Trust in the past three years has been in the area of education. We have had a project for workshops, a booklet for rural landholders, a guide to environmental law, to private conservation and coastal law. They are the main three in the past couple of years.

The Hon. Dr PETER PHELPS: One thing that has come up previously, from a legal point of view, is the issue of directly porting much of the mining Act into the petroleum Act. There are material differences in mining between, for example, exploratory drilling for and production of coal, whereas there are only minor differences between exploratory drilling for petroleum and coal seam gas and final production. You would be aware that access agreements can be compulsorily sought for exploration under both Acts. Does your organisation hold the view that perhaps the petroleum Act should be amended so as to allow for a refusal at the exploratory stage for petroleum and coal seam gas exploration?

Mr SAHUKAR: In terms of the rights of landholders we feel there is a long way to go in terms of being aware there could be exploration on their property through to having a say about how that might be conducted. We understand the historical legal context that people do not own the minerals in their land.

The Hon. Dr PETER PHELPS: They can veto production on their land. They cannot veto exploration, but they can veto production.

Mr SAHUKAR: I am not aware of the particular provisions you are referring to.

The Hon. Dr PETER PHELPS: You are not aware that you can refuse to agree to a production licence but you cannot disagree to an exploration licence unless the land is under cultivation?

Mr SAHUKAR: I understand there is an exception with cultivated land. I understand there is not the ability or there is not the requirement for an access arrangement at the production stage, whereas there is at the exploration stage.

The Hon. Dr PETER PHELPS: It is the other way around, is it not?

Mr SAHUKAR: I do not think so.

The Hon. Dr PETER PHELPS: We have advice which indicates that no agreement is required at the exploration stage but agreement is required at the production stage.

Mr SAHUKAR: In relation to access agreements, my understanding is once an exploration licence has been approved the company then needs an access arrangement with the landholder in order to conduct exploration activities.

The Hon. Dr PETER PHELPS: But can demand it?

Mr SAHUKAR: Are you saying the proponent is able to demand access?

The Hon. Dr PETER PHELPS: For exploration purposes, yes, but not for production purposes.

Mr SAHUKAR: At the exploration stage the general procedure is that an access arrangement is presented to the landholder, the terms of that are negotiated and the ultimate likelihood is that, yes, the proponent will be able to go on the land subject to a negotiated, mandated or arbitrated access arrangement.

The Hon. Dr PETER PHELPS: Yes. That is right. It can be arbitrated but my argument is that given that an access agreement can be denied for production and given the nature of coal seam gas is there an

argument to be made for allowing the refusal to take place at an earlier stage; in other words, when the exploration stage is commencing?

Mr SAHUKAR: We might need to take on notice the question in relation to production.

The Hon. Dr PETER PHELPS: Take it on notice.

The Hon. JEREMY BUCKINGHAM: Firstly, I would like to commend you on your excellent submission. The Environmental Defender's Office does a great job and I think one of the key issues in this industry is the legislation and the regulation that may or may not come to govern this industry if it is rolled out across New South Wales. One of the elements of the submission you have made is to do with compensation under the Petroleum (Onshore) Act. In it you state: "A key inadequacy when it comes to coal seam gas is that compensation is limited to impacts on the surface of the land and to the boundaries of each individual property." Further, there is no direct reference to water access or damage to water. Could you expand on that: The issues as to the surface boundaries and water? Could you focus on boundaries because cumulative impacts from this industry affect neighbours? Do you think that the compensation regime that is currently in place is adequate when it comes to defining the surface, boundaries and water?

Mr SAHUKAR: In relation to the compensation being limited to the surface of the land I refer Committee members to sections 107-109 of the Petroleum (Onshore) Act. Section 107 refers to any person who is injuriously affected. But subsequently in that provision it refers to compensation being limited to the surface of the land or related impacts. We feel that is an indication of the Petroleum (Onshore) Act and the compensation provisions not being up to date in terms of applying to many of the potentially significant impacts the landholders could suffer in relation to their land, particularly undersurface water impacts. As we say, there is no reference to water specifically in the provision. I do not have information in relation to the boundaries of each individual property, although the context relates to surrounding landholders who may be affected in a range of ways, whether by noise or light.

The Hon. JEREMY BUCKINGHAM: Also on devalued property?

Mr SAHUKAR: Yes, in relation to devalued property. We would argue that there needs to be an updating of the Petroleum (Onshore) compensation regime and provisions need to be improved to make sure the fundamental impact of those with petroleum or coal seam gas on their land, as well as those who are affected in the surrounding areas.

The Hon. JEREMY BUCKINGHAM: Another key planning issue—understated somewhat—in New South Wales is what was part 3, State significant development, and the new division 4.1 under the Environmental Planning and Assessment Act, which will oversee most of these activities. In your submission a significant issue is raised with the Act still proposing to override the requirement to obtain concurrent approvals. This is a large industry and it has potential for massive impacts and yet division 4.1 will not require concurrent approvals in areas such as coastal protection, fisheries management, Heritage Act, Aboriginal heritage, native vegetation, rural fires, and even the Water Management Act outside the aquifer interference. Further, there are authorisations that cannot be refused. Do you feel this is a major flaw in the Act that needs to be redressed?

Mr SMITH: It is certainly the case that the interim measures, if we can call them that, that the Government introduced subsequent to the full review of the planning system which is currently underway have gone in the right direction, particularly in the division 4.1 area. However, we would agree with you about the need for those concurrences to be re-established. If you look at the history of part 3A, what it was about was a centralisation of power in the hands of the Department of Planning. If you are looking for good natural resource management decisions you need a whole-of-government approach. That is what concurrences are, in essence; they engage the whole of Government in that process of making decisions which will have good economic, social and environmental outcomes.

We would be, and always have been, in favour of a concurrence regime with the appropriate agencies. It is probably true in the past there have been too many concurrences and there has been duplication. The principle that the decision should be made by the whole of Government is something that we can support and we certainly would support. Further, the inability of the Environment Protection Authority to refuse a licence makes nonsense of the general principle of protecting the environment. The Environment Protection Authority should have that power and I do not think it makes sense, for a proper balanced resource management system, to say that the Environment Protection Authority has to provide a licence that is consistent with a yes.

Mr SAHUKAR: I would support that. It is counter-intuitive that the projects with the greatest significance for likely environmental impacts are exempt from the approvals that are designed as a check on those impacts and to improve decision-making.

The Hon. JEREMY BUCKINGHAM: I move on to the issue of review of environmental factors, which are fundamental to planning in New South Wales. For the record I would like you to flesh-out appendix 1, case study 1, the Santos Glasserton pilot wells review of environmental factors. It attracted attention with a community protest at Spring Ridge. There are some issues that need to be fleshed out. My questions relate to the adequacy of reviews of environmental factors. You state one of the major concerns relates to the review of environmental factors: water will be extracted from the Bluevale sub-catchment—the Bluevale sub-catchment is located between Gunnedah and Boggabri while the Glasserton project is located in the Yarran Lake Goran basin. The review of environmental factors had the wrong catchment. The review of environmental factors went on to state: The Pilliga nature reserve is located 50 kilometres west of the Glasserton site—the Pilliga nature reserve is actually 150 kilometres north-west of the Glasserton site and not even within petroleum exploration licence 1. The review of environmental factors does not mention the proximity of Lake Goran. There are further key omissions and the review of environmental factors also incorrectly states which local Aboriginal land council is to be consulted.

Obviously there are some significant inadequacies in the review of environmental factors [REF]. How do you think the reviews of environmental factors could be better formed, especially in relation to their being proponent driven and there being no consultation with the Office of Environment and Heritage? I would assume that a review of environmental factors would be dealt with by the Office of Environment and Heritage but my understanding is it is handled by DPI [Department of Primary Industries]. Could you expand on those issues around the reviews of environmental factors and their adequacy?

Mr SAHUKAR: The appendix we have provided highlights some of the significant inadequacies of the REF process to date—the fact that the process is not as transparent as it could be and that there is a lack of public input into what those assessments say in relation to local impacts that will affect local people who know about those areas and their values. The fact that they are not made public until after the exploration activity has been approved is a very significant issue that we think should be addressed. We think there should be the opportunity for local input, including correcting some of the types of mistakes that we have highlighted in this report.

The Hon. JEREMY BUCKINGHAM: The review of environmental factors is the only approval or planning instrument that is enacted in the exploration phase. If the exploration is not considered to attract an environmental impact statement, the REF is the only instrument used under the legislation to manage the exploration phase, which we acknowledge is significant.

Mr SAHUKAR: That is my understanding. If it is not considered to be a State significant development the part 5 process, which involves a review of environmental factors, will be the environmental assessment process. If that REF reveals there are likely to be significant impacts on the environment then an environmental impact statement may be required by the department, so the proponent has to go further and provide an environmental impact statement.

The Hon. JEREMY BUCKINGHAM: But the proponent determines whether or not they think it will be significant.

Mr SAHUKAR: The proponent puts forward their review, perhaps conducted by a consultant. It is then up to the department to assess that.

The Hon. JEREMY BUCKINGHAM: DPI.

Mr SAHUKAR: No, the Department of Trade and Investment. They are able to assess that and determine whether there is a likelihood of significant impacts, but to our knowledge, as we state in the appendix, there has not been that further step in relation to any coal seam gas exploration REFs to date so there has not been a request for an environmental impact statement despite potentially sensitive areas being explored. That is our understanding. In terms of the REF process more generally, we feel there needs to be greater assessment by the department or a department—for example it could be the Office of Environment and Heritage—of the accuracy of those statements. We also believe there needs to be greater emphasis on offences in relation to

misleading or incorrect information. As I understand it, the offence provisions generally require the inaccuracies to be known inaccuracies or knowingly false statements whereas we feel penalties should apply even if those inaccuracies are not intentional. If they are substantial and material and the Government is relying on those inaccuracies in making a decision there needs to be greater policing of that and better penalties involved.

The Hon. PETER PRIMROSE: I also thank you for a solid evidence-based submission, which is what we have come to expect from the Office of the Environmental Defender. In your submission you make reference to the issue of fugitive emissions in coal seam gas production. I note that in his conclusion to chapter 5 in the recent Senate inquiry, Senator Bill Heffernan's inquiry, he recommends that it is absolutely critical for consideration of the development of the coal seam gas industry that there be improved regulation and then compliance measures developed to deal with fugitive emissions. You may wish to take this on notice, but could you comment on that and whether you have any recommendations about what areas we should be looking at to improve those regulations for the industry in New South Wales, and what areas of compliance may also need to be improved?

Mr SMITH: We may need to take that on notice because it is certainly a big question. The Environmental Defender's Office has prepared—correct me if this is not the answer to your question—a discussion paper on mining law reform that covers both mining and coal seam gas with a swag of recommendations about what you could do to improve the transparency, accountability, equity and sustainability of those industries. That touches on a whole range of issues including compliance. We are happy to table that paper. Is that the issue you are asking about?

The Hon. PETER PRIMROSE: Without seeing the paper it would certainly address it in part. For instance, the science shows that whereas the greenhouse gas emissions from burning coal mainly occur in the burning, the bulk of those that occur with coal seam gas are in the production and transport phases. As a consequence the future of this industry will be critically impaired or improved by the development of regulations, technology and compliance measures to overcome the issue of fugitive emissions. I would really appreciate it, and I am sure the Committee would, if we could have a look at that document.

Mr SAHUKAR: We have copies here and we can distribute them. On the issue of fugitive emissions, there is uncertainty as to their quantity and they need to be properly studied and further examined. It is in everyone's interests, both the companies who are potentially losing gas through fugitive emissions as well as the environment and the communities that those emissions be properly quantified and factored into a full life cycle assessment of the greenhouse emissions in relation to coal seam gas as distinct from other fossil fuels. As we said in our submission, we would welcome the Committee's consideration beyond fossil fuels to alternative energies to look at comparative emissions and environmental impacts.

The Hon. SCOT MacDONALD: Following up on your comment about renewables, we had evidence a couple of weeks ago that one of the dilemmas we have as we move towards using more wind or solar energy is that we are not getting peak energy. They run at 30 to 40 per cent capacity. How does the Environmental Defender's Office make the leap from promoting renewable energy without putting up a suggestion for a transition fuel of any credibility to service peak and base load demand?

Mr SMITH: The point the submission was making was that if we are going to reach good decisions about these issues we need to have a good baseline of comparative data to assess the environmental greenhouse impacts of the full range of energy sources and then some decisions can be made. We are not suggesting any particular future; we are just saying you need all that information before you to make those proper decisions.

The Hon. SCOT MacDONALD: We might not have perfect knowledge but there is a lot of evidence, depending on who you believe, that emissions from gas are between half and two-thirds less than those from coal. How much evidence do we want? Are we going to be revisiting this for the next 10 or 20 years? At what point do we satisfy ourselves with the precautionary principle? The industry has been there for 20 years or 30 years. How much more evidence do you want and how long do we have to extend this inquiry?

Mr SAHUKAR: In relation to fugitive emissions and greenhouse impacts, I do not know that there has been enough scientific study or evidence in relation to the coal gas seam industry and the full life cycle emissions. We would welcome further studies in that regard.

The Hon. JEREMY BUCKINGHAM: I refer to the laws that govern this industry. Access agreements and arrangements for notification are issues that have been raised again and again in this inquiry.

Could you give us your views and potential recommendations in relation to the notification process whereby the only requirement is for the proponents of exploration to advertise in the local newspaper and not to notify the people who are impacted or even their neighbours, and also, in relation to the arbitration around access arrangements with landholders, where the arbitration is about the conditions that are applied to access as opposed to whether the access should be granted at all. Further to that, what is your view about who should bear the cost of an arbitration process where a proponent, an exploration company, requires arbitration relating to someone who obviously does not want to be in that process and does not want exploration? There are a couple of issues there and I would like to get your views and potential recommendations.

Mr SAHUKAR: We feel the proponent should be bearing the cost of arbitration because it is not something that the landholder would have to deal with if it was not for the interest of the proponent. I understand there are arrangements in some cases for the cost of arbitration to be paid for by the proponent but I do not have the specific details of those. I support the premise that the proponent should bear those costs, recognising the involuntariness in some cases of the negotiation process and the requirement to do that. The current notification process is limited and that is part of the frustration arising from landholders finding out about these things either through community gossip or the local newspaper as opposed to the exploration being conducted on your land or your neighbour's land and your being notified directly. As I understand it, there are some procedural requirements by the department relating to notification of exploration licences but there is not a requirement in the law. We believe the requirements for notification should be set out in law and should be comprehensive, not just a departmental policy.

CHAIR: Has the Environmental Defender's Office participated in or developed on its own any pro forma standards forms of access agreement that you make available to community groups or individuals?

Mr SAHUKAR: No, we do not. My understanding is that generally we do not advise on the specific details of specific access agreements. However, we present tips in a more general sense in relation to the types of issues that landowners should be making sure are ticked off, such as not including a confidentiality agreement unless you really want it to be confidential or the types of impacts that the coal seam gas process might have on your land to make sure—these are things that people who have not dealt with the law before or with the coal seam gas industry will not necessarily be thinking about in relation to the comprehensive potential impacts on their land. It is important that an access agreement is as comprehensive as possible to ensure that if something goes wrong the agreement covers it.

Mr SMITH: We would cover that information classically at, say, a workshop and then if an inquiry came over the line we would give some basic information and refer them to a private law firm.

CHAIR: To their own solicitor or someone like that?

Mr SMITH: Yes, there are a number of people we know that do those agreements.

CHAIR: Thank you for giving evidence. We require answers to any questions on notice within 21 days. Because that takes us over Christmas we will have a deliberative meeting later to see whether the Committee agrees to extend that to 30 January. In any case, we would appreciate your getting to us as quickly as possible any information you have offered to the Committee.

(The witnesses withdrew)

(Short adjournment)

PETER ANDREW TOWNSLEY, Stop Coal Seam Gas Illawarra, and

PETER TURNER, Northern Illawarra Sustainability Alliance, affirmed and examined:

CHAIR: In what capacity do you appear before the Committee?

Mr TOWNSLEY: I represent the organisation, Stop Coal Seam Gas Illawarra.

Dr TURNER: On behalf of Northern Illawarra Sustainability Alliance.

CHAIR: Would either or both of you like to make a brief opening statement? If your statements are long, I ask that you précis them and table them for the purpose of Hansard.

Mr TOWNSLEY: Stop Coal Seam Gas Illawarra is a non-aligned community group and its members and supporters represent a broad section of the community with many like me involved in a protest for the first time. Our submission is a collective effort and I am here to represent that effort. I am not an expert; simply a concerned resident. Stop Coal Seam Gas has a number of general concerns about coal seam gas mining. Concern number one is that real world events and research confirm there are substantial risks posed by the production of coal seam gas mining. This is from the contamination of water and land, the impact of the massive industrialisation footprint on the environment and an adverse affect of Australia's greenhouse gas footprint.

Many examples and research references were included in our submission but there have been developments since that further underpin our call for a halt to coal seam gas mining pending the outcome of a Government inquiry. These include the Royal Geological Society and its United States counterpart linking earthquakes directly to shale gas mining and stimulation; the Senate's inquiry's finding and recommendation for the Murray-Darling; the National Water Commission's finding on the risk coal seam gas mining poses to water management; and Arrow Energy's admission that it released contaminated water during the Queensland floods.

Concern number two is a lack of independent research into the long-term cumulative consequences of coal seam gas mining and a growing number of eminent Australian bodies are now voicing their concerns about this, some of whom I am sure the Committee has already heard from. The common theme in these reports, as far as I have read, is that we can identify that the risk is real but we cannot properly quantify it due to lack of research so how can coal seam gas mining be allowed to continue on this basis?

Concern number three is the inadequate regulatory environment. Current coal seam gas approvals occurred before the impacts were known. Events have shown that regulations are inadequate, industry self-regulation is doomed to fail and the exclusion of local communities and their representative bodies is wrong and unjust. New South Wales has a bewildering array of legislation and approvals for coal seam gas mining but is not providing proper safeguards. A royal commission would determine whether the industry can ever operate safely and, if so, what regulation is required.

However, we also wish to bring to the attention of the Committee the special considerations that need to be given in the Illawarra on account of it being Sydney's most reliable water catchment yet Apex's approvals are centred around the catchment special areas, set up to protect our water supply, and where an $11,000 fine applies for casual trespass by walkers. It is important as a conservation area, as reflected in a recent upgrading of the Dharawal State Conservation Area to national park. At least one Apex drill site is just metres from its boundary. The special nature of the upper escarpment, whose rainwater catchment, filtration and storage capability is so vital to Sydney's drinking water supply, is threatened by various coal seam gas mining practices. The area having been extensively mined for coal and already suffering serious damage from long-wall mining increases the risk of cross-contamination and earthquake. The upper escarpment is also classified as higher bushfire risk, the upland bog being made of peat.

To us it beggars belief that with a moratorium in force, with the recommendations of the Senate committee and with this inquiry still to submit its report, the New South Wales Government would issue a new drill permit deep into a special area—yet it did just two weeks ago. Two aspects of this approval illustrate how inadequately risk is being managed: The steel casing necessary to avoid contamination will cover only 10 per cent of its length, leaving 90 per cent without that protection. Unbelievably, the approval does not take into account either the production impact of coal seam gas mining in the area or the impact of Apex's proprietary

stimulation technology, that is, its alternative to fracking. These extracts from the approvals speak volumes to me:

> …the proposal is not permissible under the Wollongong local environment plan due to the E2 zoning, however, the State environmental planning policy allows petroleum exploration without consent.

It then goes on to say:

> … in a strictly legal sense issues arising from production, such as fracking and aquifer contamination do not apply.

Yet, as shown our submission, 150 to 200 production wells are very likely. Finally, we believe there are aspects of the original approvals for petroleum exploration licences 442 and 444 that need investigation: How were they issued by the Department of Primary Industries against the advice of the Department Environment and Climate Change and the Sydney Catchment Authority? Also, the appropriateness of the pressure brought to bear on the Wollongong council Administrator by the Department of Primary Industries to change its environmental plan to accommodate coal seam gas mining in the Woronora catchment.

Under these circumstances we consider our calls for a royal commission, a moratorium on coal seam gas mining pending its outcome, and a total ban on fracking, and similar coal seam gas stimulation techniques, to be modest. We are therefore looking for the inquiry to endorse this approach but also recommend the immediate and permanent banning of coal seam gas mining in all water catchments, national parks and conservation areas.

CHAIR: Dr Turner, do you want to add some comments?

Dr TURNER: Yes. I certainly support the comments just made by Peter Townsley. I will concentrate on two aspects of our submission: the risk to key water catchment areas and a call to ban coal seam gas mining in key catchment areas, something I notice is supported by the Wollongong City Council. And also that gas is a poor choice given the context of an urgent need to address climate change and given that New South Wales, with a currently low dependence on gas use, is in a good position to establish itself as the leading renewable energy State in Australia. I would like to make a couple of general comments. From an outsider's perspective anyway there seems to be a conflict of interest when governments set the legislative framework and defines the project approval process where it stands to gain from a project's revenues.

This is reflected in the community apparently having little chance of success when making appeals against projects that have been approved and seems to leave, from an outsider's perspective, the Sydney Catchment Authority with little authority to do what it is expected to do under its statutory role. Another comment I would make is that the project proponents—and I think this was touched on by the Environment Defender's Office earlier—provide the environmental impact assessments and that would bias the assessments in favour of the project proponent. Maybe it would be an idea instead to have the assessments provided independently and ideally peer reviewed, and that could be funded by a mechanism such as that used by the Subsidence Board, for instance.

There seems to be no means of addressing cumulative impacts when assessing projects and that is particularly important, as Mr Townsley was suggesting earlier, where the coal seam gas projects may overlie existing or pre-existing coalmining works. With respect to the threat to key catchment areas, I am sure the Committee will be aware that Apex Energy holds petroleum exploration licences that overly the metropolitan, Woronora and Warragamba special areas that supply high-quality water to Greater Sydney so probably approximately five million people depend on the quality of water coming out of those catchment areas. For me and for others in the community it would seem to be a no-brainer. There should be no-risk taking in those areas. That role is critical and it should not be compromised in the interests of other considerations. The areas were set aside in 1998 to protect water and it seems reasonable to suggest we should not be gambling with our water security or that of our children.

Coal seam gas mining in special areas threatens large-scale land clearing of the kind you see in Chinchilla removing essentially irreplaceable vegetation and soil. It undermines the integrity and function of the catchment. There is a risk of spillage of highly saline produced water from coal seams. There is a risk of subsidence—it is a small risk in that area but it is a known risk. There is also a risk, as Mr Townsley suggested, of fugitive methane emissions contributing to greenhouse gas warming.

The Committee is probably aware that earlier this year the New South Wales Scientific Committee stated that coal seam gas activity has potential to cause the same impacts that long-wall coalmining causes. That committee has listed long-wall mining as a key threatening process. Coincidentally yesterday, as part of participating in an ABC Open project, I personally saw some of the damage caused by long-wall mining in the Woronora special area. It is no exaggeration to say that that damage is jaw dropping. There are fairly lame looking attempts to enact remediation in that area but that look very unconvincing. The drill that is being used is frail, fragile and does not seem to be able to withstand any kind of mechanical wear. It is kind of wishful thinking to suggest that that kind of damage can be remediated. It would be complicated by any coal seam gas mining in that area.

It is a concern to me and to others that the special catchment areas are not listed in the seven regions that are going to be assessed under the Government's Strategic Regional Land Use Policy review. It is disturbing that an important catchment area like that is not being looked at as part of the strategic land use review. In general it seems that catchments are not being considered under the strategic land use review. My understanding is that the definition of "strategic land" is with respect to agricultural land use and biodiversity value, but catchments, as I understand it, anywhere mentioned is incidental. It seems that the Government at this stage is not taking into consideration the importance of these catchment areas.

I note that during the election campaign the Premier and his team donned themselves with bright red T-shirts that boldly declared "Water before Coal" in white text to demonstrate opposition to coalmining in the Wyong catchment. Why is the Government not similarly defending the special area catchments that supply water to Sydney? Why is it not similarly defending other catchment areas in Sydney Basin and elswhere such as Wyong, the Hunter and Southern Highlands? We suggest that there should be no coal seam gas mining in key catchment areas such as the special areas managed by the Sydney Catchment Authority. We also suggest that the Government should look at giving the Sydney Catchment Authority the powers it needs to carry out its statutory role.

I also want to comment on gas as an energy choice. Recently the International Energy Agency released a report called the "Golden Age of Gas" which indicates that continued trends to use gas would likely see a 3½ degree temperature rise by 2050 at least, a concentration of carbon dioxide of approximately 650 parts per million. That is not in the interests of anybody and not in the public interest. Recently the International Energy Agency also released its Outlook report for 2012 that states that there is a five-year window in which to change our current emissions path. So it is a very short time frame. The current path that New South Wales is taking is not consistent with that path. It is not consistent with the Australian Climate Commission's recommendation that emissions peak before 2020. The current path being taken by the New South Wales Government is not consistent with a prudent response to the threats posed by climate change. Recently the Premier said that he is opposed to any further wind projects in New South Wales. That also seems to be a statement not in the public interest. I think I might have exceeded my five minutes so perhaps I will stop there.

The Hon. GREG DONNELLY: Both of you have referred to some exploration work that has been done by Apex in the Illawarra area. Are you able to give the Committee a précis or overview of the consultation that that company has engaged in with local communities in terms of its interest in getting on with the exploration that it wants to undertake?

Dr TURNER: My understanding is that there were some initial discussions with a small group in Darkes Forest but I do not remember exactly when that was.

The Hon. GREG DONNELLY: I am sorry, you will have to slow right down because I did not even hear that myself.

Mr TOWNSLEY: That was about three months ago.

Dr TURNER: There was a small consultation with a group of Darkes Forest residents I think in 2009—it might have even been a little bit later—but there was no broader community consultation. So there was no consultation in Helensburgh where I live, for instance. Peter has just mentioned that there have been more recent meetings but that is obviously post the project approval. So I do not think there was anything to advise the community prior to that.

Mr TOWNSLEY: My exposure to Apex and that community consultation started earlier on this year. Prior to that, I agree, I think there was one meeting with the Darkes Forest residents and that was about it. Apex

was invited to attend the community forums as they took off in Helensburgh and in Thirroul for the Illawarra organisation, which they declined to do.

The Hon. GREG DONNELLY: Just to be clear, these are forums that you were associated with organising?

Mr TOWNSLEY: Not the Helensburgh one, the Thirroul, Illawarra forums, but I have attended most of the forums. They declined to attend. We managed to establish a private consultation with some of the Stop CSG members in Thirroul in about the end of May this year where we ran through our concerns. There was some words said that would suggest that they wanted to work with the community but basically the attitude of the group was: It is a done deal; it is a question of how we go ahead with this; we don't really want to upset the residents. But there were no moves really for any interactive, progressive consultation.

The Hon. GREG DONNELLY: You explained that there was a meeting with members of the Stop CSG group. Were mining representatives present there?

Mr TOWNSLEY: The chief operating officer and the marketing manager of Apex Energy.

The Hon. GREG DONNELLY: Attended?

Mr TOWNSLEY: Yes, where they gave us some bits and pieces. For example, this map here of the colliery works they are tapping into around the area. I do not know if the Committee is aware of the mining that has gone on in the plateau but it is absolutely extensive. This rats nest of a map shows exactly where they sit in relation to particularly petroleum exploration licence [PEL] 442 here.

CHAIR: Mr Townsley, are you able to table the maps? Do you have sufficient copies?

Mr TOWNSLEY: I have one copy of each. I can make some copies and submit them.

CHAIR: Will you please do that on notice?

Mr TOWNSLEY: Yes. On the back you will find—

The Hon. GREG DONNELLY: The issue of mining you just referred to is coal mining that has been conducted in the past?

Mr TOWNSLEY: That is correct, and for this exploration there are two aspects of it. The first is that they are going to tap into what is known as the goaf, which is the existing mine workings, into identified low-pressure areas to see if they can draw commercial quantities of gas out of the existing mine workings. The second phase is to drill down to the seams below the ones currently being mined—

The Hon. GREG DONNELLY: I am sorry to keep interrupting, but these are mines that are now abandoned?

Mr TOWNSLEY: They will be drilling in areas that are abandoned because of the safety of the miners but they are extension of mines that are being not only worked but expanded. For example, there is an application in to extend the Bulli mine, the good chip mine, by a factor of ten times. There are some large expansion plans going ahead in the area.

Dr TURNER: I can add that Apex was hoping to be able to do some coal seam gas work over the coal licenses operated by Peabody—that is a currently operating mine that got an expansion in 2009 to go under the Woronora Reservoir.

Mr TOWNSLEY: One is into existing mine workings. What they do—and what this diagram shows—is they drill down through the pillars in the mine workings. It is not like drilling into normal shale or rock where you have acres or even kilometres of space between faults; you are actually drilling into the pillars that have been left to stop the mines collapsing, and drilling through them. That means you are in close proximity to the old mine workings. The second phase is then to drill down to levels two and three, which have been largely unworked—level three is definitely unworked because it is too deep—and they are considered to be the gassier of the mines, to do commercial extraction from scratch.

The Hon. GREG DONNELLY: Dr Turner, in your opening statement you made a comment—I think I recorded correctly—about the importance of peer review work to be done. You said words to the effect "like they do with the subsidence board peer review work". Could you elaborate on what you meant by that?

CHAIR: Dr Turner, I remind you to try and speak slowly.

Dr TURNER: I think maybe you did not quite catch what I was saying because I was speaking too quickly, but what I was suggesting was that the current process where the proponents provide an assessment report does not seem appropriate; it leads to bias. In that case there should be some independent process. Ideally that should be a peer review process, but there would be costs associated with that. So I was suggesting that the funding for that process could be along the lines of the subsidence board.

The Hon. GREG DONNELLY: As a potential model?

Dr TURNER: Exactly.

The Hon. JEREMY BUCKINGHAM: Dr Turner, will you expand on the recognised ecological value of these areas and what the cumulative impacts of coal seam gas maybe to that ecological value in the Special Catchment areas, which have been identified. In your submission you say:

> Several vegetation communities have been recognised as endangered ecological communities [EECs] under the Threatened Species Conservation Act 1995.

What is your view as to the impact to the ecology and what would those impacts potentially look like?

Dr TURNER: The most important ecological community that comes to mind is the upland swamps of the Woronora Plateau, which are concentrated in that area. They are known—thanks to the work of people such as Dr Ann Young—to have a critical role in the functioning of the catchment area. They act as water entrapment and water filtration. So they store water and filter it. They play a significant role in the quality of the water that you receive in Sydney and I receive in Helensburgh. Coal seam gas mining inescapably involves land clearing. If you looking at 150 or more wells in that area, you would have to be looking at some damage to the upland swamps, which must have some impact on the quality of the water that comes out of that area.

Along with the upland swamps there are a number of communities threatened. I think it is 12 invertebrate species that are threatened and a number of plant communities are threatened in addition to the upland swamps. The upland swamps I think are the iconic concern. They were given preliminary recognition by the New South Wales Scientific Committee as an endangered ecological community. They have been recognised in the 2008 southern coalfields report as being critically important. They were recognised in 2009 in the Planning Assessment Commission report for the Peabody Mine expansion as being critical. They were again recognised in the 2010 Planning Assessment Commission report for the Bulli seam operations project. You do not expose those communities to risk; they are essentially irreplaceable. The soils that support them are essentially irreplaceable. There is no prospect of remediation and the notion of biodiversity offsets does not make sense in that context either.

The Hon. JEREMY BUCKINGHAM: You are referring there to the southern coalfields inquiry in 2006, which identified the ecological integrity of the special areas as important in the role of protecting water. Further, will you give us your views on State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011, which requires all proposed development in the Sydney drinking water catchment to have "a neutral or beneficial effect on water quality"? Is it your submission that this proposed development would not have a neutral or beneficial effect on water quality and that in fact this proposed industry would be counter to that State environmental planning policy?

Dr TURNER: Correct. It is just not my view; it is also the view of the Sydney Catchment Authority itself. That was one of the concerns that it had with respect to its opposition to the recently approved additional exploration bore notice AI19, which is in the Woronora Special Catchment area and very close to where the long-wall mining damage has been caused by coal mining companies. So if the Sydney Catchment Authority has that concern I certainly would share that concern. Long-wall mining has undermined the quality of water coming out of the catchments. There have been measurable changes in water chemistry as a result of a redirection of water flow from the surface underground with most of it re-emerging further downstream but with

some of it actually being lost—so it is a losing stream now. The redirection causes interaction with freshly exposed rocks that changes the water chemistry, so long-wall mining would not pass the NorBe test.

Given that the New South Wales Scientific Committee expects that coal seam gas mining would have similar impacts to long-wall mining, it would be reasonable then to expect that coal seam gas mining would also fail the NorBe test—that is how the neutral or beneficial effect is referred. It is a worrying concern. The Sydney Catchment Authority is aware of the harm caused by long-wall mining, it is also aware of the harm that can be caused by coal seam gas mining but it does seem to be able to do anything about that. It does not seem to be able to stop mining activity that is harming our water.

CHAIR: Dr Turner, would you please restate the name of that test?

Dr TURNER: Neutral or beneficial effect on water test.

The Hon. JEREMY BUCKINGHAM: From my understanding, coal seam gas produces a lot of water through the dewatering of the coal seams and that water has to be managed. Obviously there is variability within that water quality. Your submission suggests that the environmental assessment for the Apex coal seams downplays, in your words, the significance of the water quality. Will you expand on that?

Dr TURNER: "Downplays" is perhaps not quite right. It does not seem to provide enough information to make an appropriate assessment of what the threat posed by that water would be. The analysis information is very limited and the volume of water that would be extracted is also very vague.

The Hon. JEREMY BUCKINGHAM: It has been suggested that we can manage the interception of the different geology strata and reduce the likelihood of water moving between different aquifers, and potentially even ground water in this particular area. What is your view on the issue of pressure differential leading to potential water movement between aquifers and aquitards?

Dr TURNER: I am not a hydrologist so I can only comment from a layperson's perspective. From my understanding the drilling process penetrates the aquitards that are present in the Illawarra area and across to the Wollondilly. That, in principle, then opens up the possibility of water moving between ground water, surface water and deeper coal seam waters, and that is a risk I guess that has to be taken if the project gets approved. The proponents of the project state that they can minimise that risk by quickly sealing off. Once the exploration or the production well has been finished with, they then cement and use steel casings to seal the path that they drill into the ground, into the coal seams.

The assumption is that that sealing process will last indefinitely, but there is no reason to think that that sealing process will last indefinitely. Eventually the concrete will fail; eventually the steel casings will corrode; eventually water will begin to migrate between different layers and different mixings will occur of different concentrations of materials. There is also the possibility that gas will re-emerge at some point of the migration process out through an exposed failed well.

The Hon. JEREMY BUCKINGHAM: I recently travelled to Thirlmere Lakes and was very concerned to see that there are no longer any lakes there. What is your view on the damage that has already been done to the hydrogeology of the Illawarra plateau and whether or not this industry may exacerbate that damage? Also, what is your view on what has happened at Thirlmere Lakes?

Dr TURNER: Coincidentally, I was at a meeting where Dr Phillip Pells presented his 18-month analysis of the drying out of the Thirlmere Lakes. It is a chilling analysis. It suggests that long-wall mining that did not take place directly underneath those lakes but took place some kilometres away from those lakes, changed the hydrogeology gradients in the area, which then led to a redirection of water flows, a direction of water flow that slowly drained water out of the lakes. There probably was some contribution associated with weather patterns, the drought and then possibly some recharging rain; nonetheless, overall there was a significant contributing factor, it seems, from this effect of long-wall mining which drains out coal seam water as the mining takes place, causing a redirection of flows that drains water away from the lakes. In his presentation, Phillip Pells went out of his way to state that that had very significant implications, very concerning implications, for coal seam gas mining. I think he then described the effect of draining water from coal seams for gas extraction as being like coal mining on steroids. That is, it penetrates further and draws water more quickly than coal mining does, so its impacts can be much greater, than seen with Thirlmere Lakes, if

indeed what he is suggesting is the cause or at least the partial cause behind the drying of Thirlmere Lakes is correct. It is a deeply disturbing analysis and, if it is correct, does have serious implications for the industry.

The Hon. Dr PETER PHELPS: Mr Townsley, would you describe your organisation as Stop Coal Seam Gas Illawarra, or halt coal seam gas until some time in the future when the benefits and negative aspects of the industry can be properly adduced?

Mr TOWNSLEY: I think our position is really clear in our mandate, and that is that we want to stop coal seam gas mining now in all aspects, including existing permits; we want a royal commission and proper independent research into the risks associated with coal seam gas mining; and one thing we definitely want a permanent ban on is the stimulation technique known as fracking. If, through this process, it can be shown that coal seam gas mining can be conducted safely, then why would we oppose it?

The Hon. Dr PETER PHELPS: Who do you believe should be conducting such an independent review of the environmental aspects of coal seam gas mining, because I believe Dr Turner said that the Government is inappropriate because of the pecuniary advantage that accrues to government and therefore government cannot do it? Who would be doing this analysis of the environmental aspects?

Mr TOWNSLEY: I think this is the million dollar question.

The Hon. Dr PETER PHELPS: I just want to make sure that it is not an insuperable question. I want to make sure that you do have a view that it is possible—

Mr TOWNSLEY: Yes, I do.

The Hon. Dr PETER PHELPS: Rather than saying it is impossible.

Mr TOWNSLEY: In days gone by, you might turn to someone like the CSIRO. The problem we have now is that the power of the mining industry is disproportionately large—it is probably more influential now than the Federal and State governments put together—so getting independent research that is not in some way aligned to the resources sector is quite difficult. There might even be a case for going overseas and contracting research organisations that already have experience in this area, in the shale gas area, so you have the Tyndall research, which is aligned to Lancashire university in the United Kingdom that did the research for the British Government. You have Duke University in the United States that has done various studies on things. There are other research organisations outside that you could bring in, if we were concerned that we could not align that properly, but frankly I do not know what the answer is for that. That is, I think, one of the most important issues to try to nail down through this inquiry process—how is it best achieved? But it should be possible, yes.

The Hon. Dr PETER PHELPS: It should be, but I am just concerned that environmental organisations seem to reject any organisation's input unless it concurs with their views.

Mr TOWNSLEY: Number one, we are not an environmental organisation, we are a community group that has been absolutely neglected by government process. That is why the organisation has been formed and that is why you see such staunch support for it. There is no justification on any side of the House for how we got into this situation already in New South Wales. I do not throw it at the current Government or the previous Opposition; there is a heap of blame to be issued there.

Dr TURNER: My comment with respect to the Government having some conflict of interest was directed at the way that legislation is framed and the way that planning process approvals are designed. It does make it difficult for anybody that opposes a proposal being approved. It is difficult for a challenge to be successful.

The Hon. Dr PETER PHELPS: I am specifically looking at the analysis of coal seam gas per se, that is, issues of interconnectivity, long-term degradation of sealed bores and things of that nature. I do not want us to be put in a situation where we have to make recommendations and say that some independent body should look at this, but there is no independent body which we could possibly ask because everyone is compromised one way or another. Do you have confidence that, for example, state government agencies would be able to do it?

Mr TOWNSLEY: I personally have no confidence that a state government agency would be in a position to do it. If they were, we would not be in the situation we are in now. I would like to think that a body like the CSIRO could be drafted in to come up with the right results, but again the CSIRO has joint ventures running with resources industry. You ask why there is scepticism. The whole saga around the Worley engineering report for the Australian Petroleum Production and Exploration Association [APPEA] talks of the integrity of the way these documents are put together. It is a serious problem and, if you break that, you are probably well on the way to a solution. But do not think that in Stop Coal Seam Gas Illawarra you are getting a bunch of people who are anarchists, environmentalists, tree huggers or anything like that. These are ordinary people right across the spectrum of the community who are absolutely appalled about what they have found out in the last six months that the Government has done behind their back.

The Hon. Dr PETER PHELPS: I am not casting aspersions, but we have had previous witnesses who have said that, irrespective of what evidence is adduced, they will oppose coal seam gas.

Mr TOWNSLEY: And I am sure we have some followers in our group that would say the same thing to you. I am saying that that is not the view of the organising committee and it is certainly not my personal view. My own personal view is that there are probably some areas in Australia where coal seam gas mining can be done safely and safety regulated for the benefit of all, but certainly not in the water catchment areas of the Illawarra or the Warragamba.

The Hon. SCOT MacDONALD: I was also in Wollongong yesterday, but I did not follow the Hon. Jeremy Buckingham up and down the lakes or wherever he was; I was talking to councillors. The thrust of my question is probably what I asked the Environmental Defender's Office. There seems to be a paucity of evidence or data about domestic experience and there continues to be references to what has happened in the United Kingdom or United States or elsewhere. We do have 20-odd years of industry throughout the country and we have found a couple of instances in those 20 years. Is there not any sort of satisfaction in your minds that the industry is proceeding, and that there are safeguards? We seem to be grasping for the negatives. When the negatives are there—and there are a couple of instances—they are not what I would call earth shattering. Why do we need to keep referring to the United Kingdom seismic activity or the Pennsylvania spill, or something like that, where there are different industries, different geography, different technologies—different everything—and we have 20-plus years of history here that we seem to gloss over?

Mr TOWNSLEY: I challenge what you say, I am sorry. We have not had 20 years of intensive coal seam gas mining in Australia. We have had some activity going on in various places, but we do not have 20 years of 40,000 wells being dug in the Darling Downs or wherever, or 150 across the Darkes Forest plains. It is a nonsense to say that. If a cigarette hurts someone's health in the United States, or asbestos injures someone in the United States, why is it not relevant to say that it is likely to do the same here in Australia? It is the intensity of the mining, the length of time that this industrialisation process has been going on, that is driving the evidence, and I think this is the thing to be mindful of. These things are not going to come to the surface overnight. It is not likely to affect me in my lifetime very greatly, but for my kids and grandkids it certainly will, and that is the responsibility we are taking on in this campaign right now, to ensure that in making a few dollars over a few years we do not sell out some valuable resources that we later regret. If that sounds emotional, that is fine, but it is the core.

The Hon. SCOT MacDONALD: You make the point that it is new in the Illawarra, but I challenge your challenge. In Queensland there are literally hundreds of wells. We have visited them. It is not the Illawarra experience, and I do not dispute your right to make that distinction, but I think you have to acknowledge that we do have history of the industry. I do not think it is fair to dismiss that history in Australia.

Mr TOWNSLEY: Thirty-five to forty of the Arrow Energy wells that were tested this year by the Queensland Government were found to be defective, either contaminated or leaking. Fifteen of them were leaking at a level that could cause an explosion—and that is over 400 wells. If you translate that to the Illawarra and the water catchment area, we could expect problems with a dozen wells around our water catchment.

The Hon. SCOT MacDONALD: When we drill back—pardon the pun—and look at those reports, we find that they are very minor. The emissions are almost insignificant. In any activity you will get some consequence, no-one would dispute that, but I think we have to move away from the disaster scenario and that Queensland is a write-off. That does not seem to be borne out by the evidence.

The Hon. RICK COLLESS: In your submission you talk about shale gas and coal seam gas in virtually the same sentence. We have had evidence here that would suggest that coal seam gas and shale gas are two completely different processes, particularly in relation to fracking pressures and the intensity required for shale gas. Do you see that they are two completely different operations?

Mr TOWNSLEY: No, I do not. I mean they are different, obviously, they are extracting gas from different geological structures, but the technologies and the techniques being deployed in both are, for all intents and purposes, identical. They are the same.

The Hon. RICK COLLESS: In terms of which particular process—the fracking process?

Mr TOWNSLEY: The drilling, fracking and stimulation, whichever form of stimulation they use because there are various types; the dewatering, the reduction pressure to draw the gas out—very similar process in a different geological formation. I refer you to Marius Clappers, in his address to the annual general meeting of BHP, where he said that shale gas and coal seam gas are very similar processes except that shale gas is safer because it happens at a greater depth, and these technologies that have been deployed to extract gas from underground were designed for deep earth operations, three to five kilometres beneath the ground, where there is plenty of geological protection from whatever might occur. We are talking in the Illawarra of 200 metres to surface.

The Hon. RICK COLLESS: We took evidence from a gentleman who had extensive experience internationally in the fracking process. It was his submission that the pressures required to fracture shale were in the order of 10 times greater than the pressures required to fracture coal. We put the question to him, when the fracturing process occurs for coal, is there any chance that that would fracture the overlying strata and he said, no, because the pressures were simply not great enough in order to fracture the aquitard above and below the coal seam. So the two processes are substantially different, particularly in terms of the fracturing processes required.

Mr TOWNSLEY: I suggest that independent research would prove that to be the case if that were so. I am not convinced, but I am not an expert. Tomorrow at Mittagong you will meet someone who was head of Chevron's research unit and who ran its coalmine business who says exactly this about fracking.

The Hon. RICK COLLESS: You state in your submissions that the wind turbines that are used extensively overseas should be used more in Australia to produce extra electricity. Would you be happy to see thousands of wind turbines located on the top of the Illawarra escarpment?

Dr TURNER: That was not in our submission; it was not suggested.

The Hon. RICK COLLESS: I am asking you that question.

Dr TURNER: It is a fairly silly suggestion. There is never going to be thousands of windmills across the Illawarra escarpment.

The Hon. RICK COLLESS: Why not?

Dr TURNER: New South Wales is a large State and it can easily accommodate far more wind turbines. Germany, which has about half the land mass of New South Wales and a population 81 million, generates about 27 gigawatts of power from wind. We generate about 150 megawatts and there are proposals for 2,000. It is a totally different scale.

The Hon. RICK COLLESS: My question was whether you would be prepared to accept the fact that you could have a line of wind turbines across the Illawarra escarpment.

Dr TURNER: I will follow Barry O'Farrell's example and make a personal comment. I would not mind seeing more windmills on the Illawarra escarpment. That is my personal opinion.

The Hon. RICK COLLESS: What would be the environmental impact and how much land clearing would be required?

Dr TURNER: I would object to any windmills on the special areas for the reasons I stated earlier. There would be no produced water being dragged up from the coal seams and no risk of spillage of highly saline and possibly basic waters onto the surface of a fragile ecosystem that is crucial to our drinking water supply.

The Hon. RICK COLLESS: Would there be a visual impact?

Dr TURNER: I would like that; I would enjoy it.

The Hon. RICK COLLESS: Many people would not.

Dr TURNER: I enjoy the drive to Canberra and looking at the windmills.

Mr TOWNSLEY: The issue is renewable energy; it is not one element.

CHAIR: I also like wind turbines. Thank you for providing that evidence. The committee clerks will take any documents you wish to table. I am not sure whether you took any questions on notice. However, if you did, answers should be forwarded to the Committee within 21 days. Thank you very much for agreeing to appear before the Committee.

Mr TOWNSLEY: Any members who do not know the Illawarra can have copies of photographs that I have with me.

CHAIR: Thank you very much.

(The witnesses withdrew)

STUART JAMES KHAN, Senior Lecturer, Water Research Centre, University of New South Wales, affirmed and examined:

CHAIR: Are you representing an organisation or appearing as an individual?

Dr KHAN: I am appearing as an individual.

CHAIR: Would you like to make a brief opening statement?

Dr KHAN: My formal qualifications include a bachelor of science and a doctorate in environmental engineering from the University of New South Wales. I am member of the industry body Engineers Australia and I am a senior lecturer in the School of Civil and Environmental Engineering at the University of New South Wales. I teach undergraduate and post-graduate engineering students courses covering water quality, water treatment, risk assessment and sustainability assessment. I am also the leader of the Trace Chemical Contaminants research stream at the university's Water Research Centre and I lead a number of research projects focusing on topics including water quality analysis, management of drinking water supplies, advanced water treatment and water recycling for potable and non-potable purposes.

I have a further role as a member of the Water Quality Advisory Committee of the National Health and Medical Research Council. On that committee since 2007 I have lead most of the undertakings relating to the presence and management of trace organic chemical contaminants in drinking water supplies. That has included major revisions to the Australian Drinking Water Guidelines released in October this year. I reiterate that I am not representing any of the organisations that I just named; I am appearing in a personal capacity. As a scientist and engineer, I seek to consider issues in the physical world from a somewhat dispassionate and open-minded perspective.

CHAIR: Are you prepared to table your opening statement?

Dr KHAN: Yes. I hope the Committee recognises that my submission to the inquiry and the evidence that I will give today are composed of scientifically justified assessments of the facts as best we know them. In many cases we will identify areas characterised by a lack of knowledge, a lack of data, a lack of experience and high degrees of uncertainty. My major objective is to communicate to the inquiry the importance of filling some of these knowledge gaps and reducing uncertainty, and thereby reducing the risk, before proceeding with otherwise risky operations. I state clearly that I am not opposed to coal seam gas extraction for beneficial societal purposes. I am aware of some of the issues between private landholders and companies seeking to access gas supplies from beneath their properties. However, from a scientific perspective, I have nothing to contribute to those discussions. I will focus exclusively on managing risks to water quality.

I will now provide a brief overview of my submission. I included a summary of what I saw as some of the key water quality issues and risks associated with coal seam gas activities. I will highlight a couple of issues in section five. There is a need for clear guidance on environmental risk assessment for coal seam gas activities. I would be happy to reiterate why I see that as an important gap and why we must develop approaches to address it. I deal extensively with the water industry. One of the centrepieces of risk assessment and management in the water industry is thinking about the issue of hazardous events, not only assessing the risks of a particular scenario based on what we plan to do and what we go out to do. We must think about what could go wrong and the possible implications. Again, I am happy to speak further about that.

It is very important that we think about background environmental quality assessments being undertaken prior to any coal seam gas extraction activities. Without background information on water quality and the site environment we have very little information on which to determine any impact. A major data gap is understanding the hydraulic data and the interconnectedness between much of Australia's aquifers. I know that that has been addressed previously in this forum. I have included nine recommendations at the end of the submission that I hope the Committee will read and consider.

The Hon. GREG DONNELLY: Thank you for appearing before the Committee. I refer specifically to point five, which you touched on in your summary. Would you like to take this opportunity to elucidate on the need for clear guidance on environmental risk assessment?

Dr KHAN: I often speak to environmental and risk regulators in New South Wales and interstate and also to relevant agencies at a national level. I have found that there really is a lack of knowledge in terms of understanding how to assess these sorts of issues. I spoke to a New South Wales local government water utility a few months ago that was dealing with a large company that wanted to undertake exploration activities within the drinking water catchment. The person assigned to do the risk assessment in that case had a bachelor of science degree and was two years out of university. There was no real information. There is a lack of knowledge about what questions to ask, what things they should be concerned about, what requirements they should impose and how they should go about assessing a proposal. One of the important ways to address that is with nationally consistent guidelines that environmental and health regulators and other decision-makers can refer to to arrive at a solid scientific foundation based on the best available science in the country. They need something to refer to so that they are informed about how to make an assessment. They must know what questions to ask and what requirements should be imposed.

The Hon. GREG DONNELLY: I will put aside coal seam gas for a moment. Given that the detailed guidance, methodology or framework you have described is important, do any models exist—either domestically or internationally—that the Committee would do well to examine?

Dr KHAN: As I said, I work most closely with the Australian water industry. Over the past decade it has changed the way it develops guidelines, not only very importantly for drinking water but also for recycled water; in fact, for managed aquifer recharge. The framework for managing drinking water quality in Australia is referred to in the Australian Drinking Water Guidelines. It has proven to be a very effective and world-leading approach to identifying risks, thinking about what can go wrong, the potential gaps in knowledge, how we go about filling them and understanding the likelihood and consequences of hazardous events, which in this case may lead to substandard drinking water quality. The Australian Drinking Water Guidelines and a number of other guidelines that have been published in recent years by the National Health and Medical Research Council and ministerial councils have taken that risk management approach and would be a very good place to start.

The Hon. GREG DONNELLY: Can I be so bold as to ask whether any of them represent a gold standard and whether any are worth looking at specifically?

Dr KHAN: The central document for many of our risk assessment processes is the Australian Drinking Water Guidelines. However, more recently a number of guidelines have been directed particularly at water recycling activities that could present exposure to toxic chemicals if the system is not designed or managed properly. There are a few different modules of the Australian Guidelines for Water Recycling, all of which are worth referring to, including the Guidelines for Water Recycling: Managing Health and Environmental Risks—Augmentation of Drinking Water Supplies.

The Guidelines for Managed Aquifer Recharge are also very relevant. They exist on a national level, but they do not consider recharge of coal seam gas extracted water. Managed aquifer recharge involves intentionally taking reclaimed water and putting it back into the aquifer. A great deal of scientific research and investigation has been done with regard to that process looking at highly treated recycled waters from municipal wastewater treatment plants. Extensive research has also been undertaken in South Australia looking at recharge of treated stormwater into aquifers. Even with those types of highly treated waters there are issues associated with the impact on the aquifer as a result of physical processes such as pressurisation and the fact that the chemistry can be fundamentally changed in an aquifer by introducing different waters.

CHAIR: Are you referring to the research being carried out in Salisbury in South Australia?

Dr KHAN: I am referring specifically to the guidelines. Salisbury is one of the major case studies, but the guidelines are national.

The Hon. JEREMY BUCKINGHAM: I must say at the outset that I think your submission was fascinating and it was also constructive in that you listed a range of recommendations that I will be endeavouring to make sure the Committee considers. The first issue I would like to deal with that you have discussed in your submission is section 4, the chemical constituents of fracking fluids. I was comparing your submission to that put forward by a particular coal seam gas company that listed their chemicals. In your submission you said in relation to the known components that may be included in some of the fracking solutions:

> However, chronic human toxicity has been associated with identified fracking fluid constituents, such as ethylene glycol, glutaraldehyde and N,N-dimethyl formamide. Actual risks to drinking water qualities and to human health will be dependent on the precise use and management of the fracking fluids and on consequential human exposure to the chemical components.

In the submission from Metgasco to this inquiry it says that a number of these chemicals are injected into the coal seam and they use them to frack. Their submission says that no chemicals or drilling fluids are discharged to the environment. My concern is that not all those chemicals are recovered from the environment and they therefore interact in the coal seam. Metgasco's submission states:

> The concentration of any additives used in the drilling and fracking processes are very low total additives typically less than 2%. All of the above chemicals are removed from Metgasco operations and placed in approved industrial waste disposal sites.

I would like your view on whether it is feasible to actually recover all of those chemicals once they are injected into the coal seam and your view on the issues to do with toxicity and human health related to having those chemicals in the coal seam and how they interact with existing chemicals.

Dr KHAN: It is very difficult to generalise but certainly it would also be equally difficult to absolutely confirm that you are recovering all of the chemicals and that there is no residual chemical remaining in an aquifer. There is no viable means of accounting for every molecule of chemicals that are injected into an aquifer.

But that is not the only issue there. I think that some of the things that you are injecting are there to change the water quality within the aquifer, to adjust the pH, such as hydrochloric acid and sodium hydroxide, et cetera. When you start to adjust the pH and also the oxidation-reduction conditions within an aquifer you start to mobilise natural chemicals within the aquifer, so you can have minerals, things like arsenic, fluoride, cadmium, mercury. All sorts of minerals from an aquifer, depending on the chemistry of the aquifer to start with, can become mobilised. Things that have been precipitated and are in a solid form for thousands of years may actually end up within the watertable or within the aquifer. That means that it is not necessarily just a question of what goes in and what comes out; it is the impacts that can potentially occur while fracking fluids are within an aquifer.

In terms of the toxic nature of different chemicals in fracking fluids, it is another difficulty in assessing that very often there is no sort of standard off-the-shelf fracking solution that all coal seam gas operations will use. Very often the various constituents are designed to achieve a particular job with a particular aquifer that might pose particular challenges. Very often the compositions of fracking fluids are commercial-in-confidence and often not publicly available. So the list that I have provided in my submission is a generalised list of the types of chemicals that might be used rather than specific chemicals that are used, so I cannot really comment on concentrations in such general terms. That table in my submission actually comes from a United States Environmental Protection Agency [US EPA] document, as it is referenced.

The Hon. JEREMY BUCKINGHAM: Do you think it is sensible for coal seam gas companies to characterise these chemicals in terms of their common usage? They have presented us with a table that says acetic acid is found in vinegar and that ethylene glycol is in brake fluid. In terms of human health do you think it is a responsible way to deal with the potential toxicity of these chemicals to list them in terms of their common usage, rather than their potential impacts, if you are ingesting them?

Dr KHAN: I guess it depends on what you trying to achieve in that case. But if you referred to acetic acid being something that is vinegar, certainly it is something that we do consume and we know is very safe to consume at certain levels of exposure, but that does not mean that you cannot have an impact on an aquifer. It does not mean that you cannot change the chemistry. You change the pH, again you start to mobilise things, different things will change in their oxidation-reduction states, their precipitation, their dissolved states. So I think that the issues are actually different for some of these chemicals. What is going on in terms of human toxicity is not necessarily the whole story in terms of what might happen within an aquifer.

The Hon. JEREMY BUCKINGHAM: Another important part of your submission that I would like to discuss is section 6 concerning the need for consideration of hazardous events, as you have called them, in all risk assessment activities. Is it your contention that there are not the necessary guidelines to deal with what you have termed "hazardous events"? Could you discuss that and also discuss what you think those hazardous events might be?

Dr KHAN: Certainly there are no national guidelines for design and risk management of coal seam gas activities and, as I have argued, I think that there should be. But if I were a health regulator and I was being asked to assess a particular coal seam gas extraction proposal the guidelines that I would most probably refer to from a human health perspective are known as the enHealth guidelines which are a national document that all of the State health regulators tend to refer to. The enHealth guidelines tell us about thinking about different chemicals and understanding potential exposure to those chemicals, thinking about the dose-response relationship, the toxicity of particular chemicals and interpreting that as the risk.

I think it is very important to go one step further than where those guidelines would take you and that is to think about hazardous events. If I were to assess any particular proposal based purely on how it was designed to operate and what was designed to happen I would think about particular levels of chemicals that people might be exposed to under those circumstances. But the way that the Australian Drinking Water Guidelines and the Australian drinking water industry as a whole have moved is to add an additional layer to say what can go wrong? What could happen is very often by human error, human mistakes that are made, might lead to scenarios which are very different to the designed scenarios and the designed levels of exposure to a particular operation. Weather impacts, a large storm, an earthquake or any kind of ground subsidence—we need to think about what might be the consequences of these types of unexpected hazardous events.

Very often with a coal seam gas fracking operation it is important to store large quantities of chemicals on site, usually in tanks or large contained areas. What could happen that might lead to the leakage of these very large volumes of chemicals that are designed to have impacts to natural systems? Such leakages could occur by accidental opening of valves, et cetera. It could occur by vandalism. There are many things that we could think about that could lead to leakage of chemicals which might then flow into waterways and have impacts to water quality. The point being that we need to really rigorously and formally include the assessment of hazardous events on any of these sorts of operations, not just thinking about how things are intended or planned to occur.

The Hon. JEREMY BUCKINGHAM: This is a bit of a cheeky question, but if were to get a glass of water of which 98 per cent was pure, beautiful, well-treated water and I added a solution of 2 per cent of acetic acid, K-35, GasPerm1100, hydrochloric acid, GEL-STA L stabiliser, KCL potassium chloride, caustic soda, SP breaker, HC 2A, BC-140, BE-6, some ethylene glycol and some sodium hydroxide, would you recommend I drink it long term?

Dr KHAN: No, I do not think so. I think in order to make an assessment of that you would want to have a good understanding of what those chemicals are, how they interact with each other and their human toxicity.

The Hon. JEREMY BUCKINGHAM: Do you think they would meet the Australian drinking water standards?

Dr KHAN: If they contained 2 per cent hydrochloric acid, probably not—although that might be neutralised by the caustic soda.

CHAIR: For the edification of the Committee and the public generally could I ask you to clarify some of your answers to Mr Buckingham. A coal seam, because it contains water, is an aquifer. Is that correct?

Dr KHAN: If it contains water a coal seam is an aquifer.

CHAIR: It is defined as an aquifer?

Dr KHAN: There are many other types of aquifers.

CHAIR: I understand that, so I was about to say that generally speaking the types of aquifer that would be used for either humans or stock or some other surface use would not be from a coal seam, would they?

Dr KHAN: Generally not because a coal seam would often be elevated in salinity and potentially other toxic chemicals that would make it unsuitable.

CHAIR: Injecting all these nasties into a coal seam really only becomes a public health issue if they get out of the coal seam. In other words, if there is any connectivity between aquifers or if a surface spill of the

chemicals occurred then you would have a problem. Otherwise do you believe it would be a public health drinking water hazard if the chemicals stayed in the coal seam?

Dr KHAN: If the chemicals stay in the coal seam, presumably not. But that is not to say that we do not get movement between coal seams and other aquifers. There are interconnectivities between different aquifers and we do not have a good understanding in most cases of exactly how those interconnectivities exist.

CHAIR: This is probably again a cheeky question, but given your understanding of the current knowledge of our underwater ground systems in New South Wales—we will stick to New South Wales—how much more work is required for governments and/or institutions to understand what happens with our underground water supplies to the extent that that knowledge could inform whether you would proceed with the coal seam gas industry?

Dr KHAN: It is a difficult question and I do not think I can give you an answer in terms of dollars or years or manuscripts. However, I think that what at least we could be doing is taking a very close look at particular aquifers on a case-by-case basis where there are proposals for various types of activities and trying to understand the interconnectivities of those aquifers as best as possible. I believe that there are techniques available for doing so.

CHAIR: To your knowledge are there other universities or academic bodies that have similar capabilities in water research to the University of New South Wales, or is it just the University of New South Wales that does this sort of work?

Dr KHAN: The University of New South Wales does specialise in the area. We have the Water Research Centre at the University of New South Wales, including the large laboratory out at Manly Vale which does a lot of hydraulics.

CHAIR: Is that a Cooperative Research Centres [CRC] or a standalone program?

Dr KHAN: Part of the Water Research Centre emerged from a previous CRC.

CHAIR: But there are other institutions that could be called upon to add to that body of knowledge?

Dr KHAN: Certainly, of course.

The Hon. Dr PETER PHELPS: Are you aware of any instance where CSG drilling has resulted in cross-contamination between the highly saline coal seam water and groundwater aquifers used for agricultural or drinking purposes?

Dr KHAN: I am aware of the one case that was reported in Dalby where there was a measurement of 2 parts per million of benzene in a monitoring well.

The Hon. Dr PETER PHELPS: That would be Myrtle 3 you are talking about?

Dr KHAN: Probably, yes.

The Hon. Dr PETER PHELPS: Are you also aware that the aquifer at Myrtle 3 which was cross-contaminated already had existing hydraulic connectivity with the coal seam aquifer and that the groundwater aquifer that the farmer was using to irrigate the property in fact showed no sign of contamination whatsoever? While there was cross-contamination with an already interconnected aquifer, there was no contamination in that instance with the groundwater aquifer that was used?

Dr KHAN: I am not aware of the details. I think there is an important point there and that is that we do not always understand the interconnectivity between different aquifers before we proceed with some of these activities. It is important we do. I understand where the question is coming from. If I am not aware of a major event that implies that such an event is so unlikely it is not something we need to be concerned about. When we talk about risk assessment, coming again from experience in the water industry, what we pay close attention to are the low-frequency, high-consequence events. You might have had a number of experienced people attend the inquiry and say: Never in my 15-year career have I heard of this happening. It does not mean that we should not pay careful attention to it. If you had asked me one year ago had I ever heard of a tsunami damaging a

nuclear power plant I would have said no, that has never happened in my career. It is important to understand that some of the biggest and most important risks to manage are incidents which occur every 50 or 100 years—not every 15 years—and they are the things we need to not lose focus on.

The Hon. Dr PETER PHELPS: It is an important point. You have confirmed what three previous hydrogeologists have said to this Committee in sworn testimony, and that is that they know of no instance whatsoever where there has been cross-contamination between the highly saline water from coal seam gas seams or walloons and the aquifers which are used for agricultural or drinking purposes—anywhere in Australia over more than 30 years of their experience.

Dr KHAN: More than 30 years of non-intensive coal seam gas activity in Australia is a small amount of mining activity. I reiterate that the same people would have said that they had never heard of a tsunami hitting a nuclear power plant. It is the same sort of risk. We do not wipe them off and say this is not going to happen and we do not need to think about it, just because it has not happened during my career.

The Hon. Dr PETER PHELPS: Is it your submission that the fact there could be a risk automatically disqualifies coal seam gas from ever going ahead.

Dr KHAN: No. I am simply saying that we need to pay careful attention to the possibilities of these things and we need to take them seriously and not dismiss them just because it has not happened in the last 15 years.

The Hon. Dr PETER PHELPS: If it has not happened surely that would indicate one part of the process has demonstrated, albeit over a 15-year time period, that cross-contamination through bore holes is not a problem which immediately evidences itself?

Dr KHAN: In the drinking water industry and in risk assessment in general—and I do participate in other types of risk assessment—we assess risk by a risk matrix. The risk matrix has two axes: One is likelihood and the other is consequence. Just because something is a low-likelihood, low-frequency event does not necessarily imply that it is a low-risk event.

The Hon. RICK COLLESS: Dr Khan, you told us about your experience, but I am wondering what your formal qualifications are and the field of your PhD. Is it in water or hydrogeology?

Dr KHAN: My PhD is in environmental engineering. My whole area of research is focused on trace organic chemicals in water, including waste water, drinking water, recycled and environmental water. My PhD was looking at pharmaceutical chemicals and their removal through waste water treatment plants. I have participated in a broader field of research since then.

The Hon. RICK COLLESS: Your comments about extraction and recharge of aquifers: Is it not true that those issues also apply equally to all aquifer extraction, particularly agricultural and domestic use water where it is extracted? The same issues would apply equally to those aquifers?

Dr KHAN: To some degree. If you are drilling through aquifers and potentially through confined rocks that might separate different aquifers, then there are risks that need to be considered in terms of creating or changing the interconnectivity between aquifers. I would suggest that activities such as fracking and extractions of large volumes of water do or could exacerbate the risks in some circumstances. But in general, yes, those issues apply.

The Hon. RICK COLLESS: In major irrigation areas extremely large volumes of water are extracted for agriculture?

Dr KHAN: Usually from groundwater tables, relatively shallow aquifers, not from deeper aquifers where you are drilling through multiple layers of aquifers and impervious rock.

The Hon. RICK COLLESS: Those in the drilling industry, and this applies to the water drillers, have to have qualifications in order to show that they can effectively seal where aquifers are overlying each other, so they are not allowed to create any cross-contamination. That same process must apply to the coal seam drillers, would it not?

Dr KHAN: I am sure that is the case. I am sure there are industry standards and practices aimed at achieving that and ensuring you do not get cross-contamination between aquifers. I think we need a national approach to assessing how well those activities are being carried out and how much assurance we can have that events will not occur in unforeseen circumstances. Of course there are industry standards and they aim to do that.

The Hon. RICK COLLESS: I read with interest your comments in the submission of depressurisation of aquifers and how that can lead to reversal of subterranean water flows and so on. If water is extracted from a coal seam aquifer some 500 to 900 metres underground what impact is that going to have on the hydraulic conductivity of the aquitard overlying that? Is that going to increase the flow of water through that aquitard? We have taken evidence before in this Committee that the flow of water through some aquitards can be measured in terms of millimetres per hundred years or less. What impact is that going to have if we extract that water out of that coal seam aquifer?

Dr KHAN: Australia is a big country and it is difficult to generalise, and aquifers are not aquifers. The relationship between aquifers and surface waters, and different levels of aquifers, is not something you can generalise about. In terms of the rate of movement through aquifers; it can be extremely slow movement through some aquifers but others are faster moving where you have cracks and interconnectivity. You can get fast movement of water through the ground. Could it occur? Could depressurisation of a groundwater aquifer result in rapid movement of surface waters and potentially contaminated surface waters into an aquifer? Yes, it can occur where there are extraction wells and movement under the ground. I am not necessarily referring to the coal seam gas industry but I am referring to our knowledge of how aquifers work in general. Changing pressures will change directions of flow. If you depressurise one area, water will flow towards that area.

The Hon. Dr PETER PHELPS: Except if you have an impermeable layer between the two aquifers.

The Hon. RICK COLLESS: It becomes a relative term. The difference between aquifer and aquitard is relative. In some situations the aquitard may well be considered an aquifer?

Dr KHAN: Yes.

The Hon. RICK COLLESS: Depending on how fast the water flow is through different strata?

Dr KHAN: And cracking through the strata.

The Hon. RICK COLLESS: The coal seam people tell us that if the coal seam aquifer recharges quickly then it is of no benefit to them, they will more than likely abandon it because they have to get the water out in order to get the gas out. If it is recharging quickly it makes that coal seam unviable for gas extraction.

Dr KHAN: Like I say, you can think about what a particular proposal might set out to do and they might expect and hope not to occur but it does not mean hazardous events do not occur. When you are fracking and depressurising aquifers you have major physical changes within the aquifer and you can get movement of the water in different directions than was anticipated. The point is that we need to think about not just what is anticipated but what is unanticipated. I acknowledge that coal seam gas companies do not want things that are going to minimise or reduce the efficiency of coal seam gas extraction to occur.

The Hon. SCOT MacDONALD: Page 3 of your submission refers to extracted produce water: It is a legitimate question. Are those challenges insurmountable in terms of the produce water being treated and used for irrigation? Put back down as surface water, whatever, are those challenges insurmountable?

Dr KHAN: It depends which challenges you are talking about. I have no argument with the suggestion that extracted waters can be treated to a high degree, in fact I say so on page 4 of my submission. For example, reverse osmosis is a treatment process which can treat coal seam gas extracted waters to a high level. I emphasise the word "can". It is important to understand that just as aquifers are not all the same, reverse osmosis membranes and processes are also variable in their performance and operation. We know we can treat water to high levels. We can remove that salinity from water and most of the other toxic chemicals from water using reverse osmosis or by additional treatment processes to produce high-quality water. That is not the problem. The problem is that when you treat water by reverse osmosis you are not destroying the chemicals and salts, you are separating the water into two components: one is a highly purified component and an equally highly

concentrated component. It is managing that concentrated brine that presents a number of challenges. If I may, I have a number of copies of this review that I wrote a few years ago.

CHAIR: Do you have copies you could table.

Dr KHAN: Yes.

The Hon. SCOT MacDONALD: That would be a primary concern of the development application, of the risks that are going to be managed? In your mind that would be one of the primary hurdles they have to cross?

Dr KHAN: It would be one of the key hurdles to cross and from the drinking water industry that is what stops a lot of reuse practices from occurring in many parts of inland Australia. We have large desalination and water recycling plants on the coast and they dump the brine back into the ocean, which is the easy disposal option. There reason Canberra does not have a reverse osmosis water recycling scheme, which they thought about having a couple of years ago, is because there is no easy solution for dealing with that concentrate and large volumes of produced brine and salty toxic water. The usual approach that has been employed during recent decades for dealing with concentrates in inland environments is to build large evaporation basins. The New South Wales Government has put a moratorium on that process. All that leaves you with are highly energy intensive, expensive—which may not be a major hurdle for the coal seam gas industry—processes designed to lead to zero liquid waste discharge. You crystallise out all of the salts and concentrate the water, often thermally evaporating that water off, and removing any liquid waste stream, which is a challenging task. I am not trying to make it sound impossible. In theory it can be done. Then you have a solid waste disposal problem. You have large volumes of contaminated salts that need to be disposed somewhere, usually to landfill.

The Hon. Dr PETER PHELPS: Why is the chemical industry not interested in those salts?

Dr KHAN: That is a question that is addressed in the review I have just tabled. In terms of seawater desalination plants it seems a more obvious question where you have seawater and salts extracted from it. There has been considerable investigations looking into the economics of recovering those salts and recovering some of the trace minerals and it does not stack up, it is not an economically feasible way of doing it. I read somewhere if you recovered all of the sodium chloride from all of the seawater desalination plants around the country, you would have a thousand times the annual demand for table salt. It is a massive amount of salt.

The Hon. SCOT MacDONALD: Page 14 states that such practices have the potential to destroy future opportunities for the beneficial use of the native waters in the receiving aquifer. Can you expand on the reinjection?

Dr KHAN: You are talking about reinjection into aquifers. When you take water that has been treated by reverse osmosis and there is concentrate, the chemistry of that water is different from that of the original water. Things are at least twice as concentrated depending on your recovery of water. You reinject that into an aquifer and you change the chemistry again. You can change the pH and you can change the Eh. If there are residual fracking fluids and other chemicals in that water that were used in the process of recovering the water all of that contributes to a change in the chemistry of the water in the aquifer. Changes in chemistry can lead to changes in aquifer chemistry and rock chemistry. You can oxidise chemicals, you can mobilise different minerals, as I mentioned—arsenic, fluoride, selenium, cadmium and mercury et cetera—and things that may otherwise be bound up in a solid form can end up back in the water itself. If an aquifer was potentially going to be used in the future or potentially hydraulically slowly connected to a drinking water aquifer—

The Hon. SCOT MacDONALD: I guess that is the basis of my question.

Dr KHAN: —then you are changing the chemistry. You are introducing chemicals in dissolved form in that water which would not otherwise have been there. You certainly are doubling the salinity by extracting water, removing half of it by reverse osmosis and dumping the concentrates back in again.

The Hon. SCOT MacDONALD: That is a question in my mind. If there is a deep aquifer into which water has been reinjected—it could be 500 metres or 600 metres or whatever—is it a concern in your mind that some time down the track those changes could impact on the shallower aquifers? Is that what you are suggesting?

Dr KHAN: I am suggesting that those assessments need to be made. These are the things we would need to think about on a case-by-case basis. What is the potential interconnectedness between these aquifers and how are we going to manage complete isolation of a contaminated aquifer from an uncontaminated aquifer even when there are major engineering processes going on, changing water pressures, changing rock structures and potentially changing the interconnectedness between various aquifers and regions within them?

The Hon. SCOT MacDONALD: Side by side.

Dr KHAN: Side by side. That is not to say that deep well injection cannot and does not occur. It is relatively common in Florida for not just seawater desalination brines but also shallow groundwater desalination. They reinject them into the deep aquifers; it occurs. But we also know from that that there are risks involved and they are risks that need to be taken seriously.

CHAIR: Thank you, Dr Khan. Your evidence has been illuminating. I wish all our witnesses were as accurate as you have been in your answers. Could we have answers to any questions taken on notice within 21 days, although that will probably be extended because of the Christmas period? Perhaps you could take this question on notice: Does your institution or your faculty have access to a list of similar institutions that do this sort of work—water hydrology, subterranean water engineering—that you could provide to the Committee?

Dr KHAN: I am not the key person in that area. My area is water quality.

CHAIR: In the broader sense of discussion.

Dr KHAN: In the broader sense, yes.

CHAIR: If you could provide the Committee with that information or list we would be very grateful.

(The witness withdrew)

(Luncheon adjournment)

PETER JOHN HENDERSON, Managing Director, Metgasco,

RICHARD JAMES SHIELDS, External Relations Manager, Metgasco,

MICHAEL JAMES O'BRIEN, Chief Operations Officer, Metgasco, and

GLENDA ANN McLOUGHLIN, Chief Financial Officer and Executive Director of Metgasco, sworn and examined:

CHAIR: In what capacity do you appear before the committee?

Ms McLOUGHLIN: As the chief financial officer and executive director of Metgasco.

Mr HENDERSON: I represent Metgasco.

Mr O'BRIEN: I represent Metgasco.

Mr SHIELDS: I represent Metgasco.

CHAIR: Do you want to make an opening statement? If it is lengthy perhaps it could be tabled to assist Hansard.

Mr HENDERSON: We wish to provide an introduction and we will provide a copy to assist Hansard. Metgasco is pleased to provide input into the inquiry into coal seam gas by the Legislative Council General Purpose Standing Committee No. 5. Metgasco can add a lot of value to the Northern Rivers region and in New South Wales by providing an environmentally attractive energy source and jobs and encouraging business development. Coal seam gas is a well understood industry and can be managed safely with a minimal impact on the environment. We can coexist with other land uses and in doing so promote both food security and energy security. Metgasco is an Australian gas exploration company based in New South Wales. We listed on the ASX seven years ago and have our headquarters in Sydney and a regional office in Casino.

We are exploring and developing the coal seam gas and conventional gas resources of the Clarence-Moreton Basin in New South Wales. We have three exploration licences but at this stage no production leases. We have invested more than $80 million in shareholders' funds exploring in New South Wales. We have built 55 wells, of which about 30 have been rehabilitated and the land returned to its original condition. We have also acquired more than 400 kilometres of seismic. The points we would like to make are as follows:

Coal seam gas is one of the cleanest, safest and most useful forms of energy. It produces up to 70 per cent less greenhouse gases than coal-fired power stations. Coal seam gas technology is not new. It already supplies 30 per cent of east coast Australian gas market and can be managed safely. Coal seam gas has been produced internationally for more than 30 years and for 16 years in Australia. In conducting our drilling operations we adhered to the American Petroleum Institute's standards for well construction and operation. Those industry standards have been established with decades of experience in drilling wells around the world. We recognise the importance of protecting aquifers and conducting drilling operations.

The drilling of wells through aquifers is not new and certainly not unique to the coal seam gas industry. Millions of water bores and minerals and gas wells have been drilled around the world. There are decades of experience and standard practices in place to protect aquifers. Our studies, supported by independent consultants, provide confidence that our coal seam gas operations can be managed safely without impact on other ground or surface water applications.

It is also worth noting that in a community meeting held in Lismore this week, the executive director of the Department of Trade and Investment Regional Infrastructure Services, Mr Brad Mallard, indicated that his department was not aware of any examples in Australia of water being contaminated by coal seam gas activities. He encouraged people with any examples to come forward. That is similar to what we have heard from comments from Mr Mallard's equivalent in the Queensland Government. We can, already do and must continue to co-exist with other land users. We have more than 300 voluntary agreements with landholders. We believe

that they are win-win deals where all the needs of the parties are respected. Our land payments provide an additional source of revenue for working farmers, helping to protect their livelihoods from drought and flood.

The industry is already well regulated. We support a strong and effective regulatory framework that is based on sound engineering and science and that improves risk management and does not simply cause delay or increase costs. It is important that the roles and responsibilities of government at Federal, State, and local council level are understood and are complementary, not overlapping. Coal seam gas opponents request extensive moratoriums to delay and frustrate the industry. These are not necessary. The industry and its science are already well understood and there are approval processes in place to allow regulatory and community oversight.

Furthermore, reviews need to be project specific. Industry wide moratoriums are not effective because studies have to be site specific. One area is not like another and it is through the drilling of exploration wells we collect data to develop the specific knowledge required. For example, the material we submitted as part of our part three approval application for the proposed Richmond Valley power project covers a complete range of issues, including flora and fauna, aquifers and noise.

We can make an important contribution to the Northern Rivers region by generating employment and business opportunities providing additional income to landowners and supporting community organisations. This is particularly important because the region has one of the lowest incomes per capita and the lowest labour force participation rate in the country. Metgasco is committed to building a strong regional energy business in northern New South Wales and to creating jobs and economic opportunities for local residents. Our purchasing function in Casino engages local businesses as much as possible. As an indication of activity, in one 12-month period Metgasco purchased goods and services from more than 95 local north coast businesses and more than 600 people have been employed in delivering goods and services to our sites.

Twenty-five per cent of Metgasco's expenditure is spent on local contractors. We employ local staff and provide training. We have established an in-house training program through a local TAFE. If we move into full production we have estimated that in excess of 500 full jobs will be created in the region. We have estimated our operations will produce $1 billion in State royalties during the next 20 years. From our involvement in community and planning forums it has become clear to us the local community we work in expects to benefit from our industry. We expect the employment and business opportunities created will have a direct positive benefit. However, the need for infrastructure and general support for the overall community should not be forgotten. We recommend that the requests from local councils for more support from the State level be given consideration. Some of the royalties we pay could be spent on local infrastructure projects like the upgrade of the Pacific Highway, building the second Grafton Bridge or having a 24-hour police station in Casino. Metgasco would support that sort of initiative.

In conclusion, Metgasco has the potential to add a lot of value for the Northern Rivers region and New South Wales by providing an environmentally attractive source of energy from both its coal seam gas and conventional gas operations. We want decisions made on fact, not rumours and misrepresentation. We would like to see some balance in the debate. Let us recognise that wells have been drilled through aquifers for hundreds of years for a range of reasons, including for water bores, oil and gas production, mining exploration and geothermal requirements. The technology is clearly not new. We should recognise that the United States of America has had more than four million onshore gas wells drilled and that is the world's third biggest food producer. Clearly, it is possible to have coal seam gas operations and for them to co-exist with other land uses and to achieve both food and energy security.

Metgasco and its coal seam gas peers have explored and invested in good faith and needs the support of a government that is open for business in the form of timely and professional exploration and development approvals. I thank the committee for allowing us to address this inquiry. If you have any questions, my colleagues and I are only too happy to respond.

The Hon. Dr PETER PHELPS: I will start with my traditional question: Are any of you experienced in hydrogeology? Do you have any understanding of hydrogeology?

Mr HENDERSON: Both Mick and I have experience in engineering. A large part of my degree is reservoir engineering which has involved the understanding of fluid flow for reservoirs, and aquifers in particular.

The Hon. Dr PETER PHELPS: Are you personally aware—remember that you are under oath—of any example where water from a coal seam gas operation has cross-contaminated with a groundwater aquifer used for agricultural purposes in Australia?

Mr HENDERSON: No.

The Hon. Dr PETER PHELPS: You spoke about local economies. One concern that has been raised certainly with mining more generally are fly-in, fly-out operations. Would you expand on Metgasco's plans were it to go to production stage for employment in the region in which you are likely to be operating?

Ms McLOUGHLIN: I would like to answer that question. I am one of the founders of Metgasco. I have been involved in the company since the company was listed. From the day that we listed the company we have always had a commitment to local employment in the Northern Rivers region. We have established a local office in Casino where we employ 15 full-time staff. We do not have any fly-in fly-out teams, other than flying up from Sydney with our management team going up to Sydney to oversee operations. To demonstrate our commitment to local employment, we have hired people into our operations team that do not have experience in the oil and gas industry. We have put them through a specialised training program through one of the local TAFEs. We obviously need to balance local employment with having experienced oil and gas industry professionals involved in our operations. We take great care to ensure that we have got the right balance and that we are promoting local employment.

The Hon. RICK COLLESS: When you are in a full production phase what is your projection as to the number of local people you will employ?

Ms McLOUGHLIN: In our submission we provided some estimates of local employment impacts. Of the estimates that we have done to date we expect that we could employ, assuming we could go to full development—it is obviously broken down by the number of projects—between 500 and 600 full-time staff directly and between 1,700 and 1,800 temporary jobs in construction. That does not take into consideration additional jobs that we could create through the employment of contractors and also the employment of local businesses in the area. As Peter said in his introduction, we know that although we only currently have 15 full-time staff in Casino we have engaged more than 600 people delivering goods and services to our sites. The jobs multiply out. It is very significant in our industry. We do believe that we can create quite significant direct and indirect employment in this area which has a very high unemployment rate.

The Hon. RICK COLLESS: Is it fair to say that you are talking about a minimum workforce of 500?

Ms McLOUGHLIN: We are at a very early stage of development. We do not have any production or revenue at this point in time so we would not like to over-state our economic impact. We think what we have put forward is a credible potential case based on the resources that we are currently aware of for the tenement.

The Hon. RICK COLLESS: I am not too concerned about the exact numbers; I am more concerned about the availability of labour in local areas to supply that number of people.

Ms McLOUGHLIN: I would very much like to comment on that because the northern rivers region is an area that provides very few employment opportunities for young people. In fact, one of the biggest exports out of the northern rivers region over the past 50 years has been young people who have had to leave to go to get jobs in Sydney or Brisbane. We see our business as an opportunity for young people to come into a growing industry that provides well-paid careers and provides opportunities for those young people to stay at home living near their families.

The Hon. RICK COLLESS: I turn to a slightly different area now. I now have some technical questions and perhaps Mr Henderson or Mr O'Brien might like to tackle them as the engineers. What is your understanding of the difference between coal seam gas operations and shale gas operations?

Mr O'BRIEN: I am happy to have a go at that. My expertise is in coal seam gas rather than shale. Typically shale gas is more like the conventional gas but with much lower permeability. So it is normally recovered at a similar depth to conventional gas—so below 2,000 metres. The gas is at high pressure like conventional gas, as opposed to coal seam gas which is naturally low pressure. Shale gas typically has the full range of hydrocarbon components. So you can go from methane through to your liquid components, whereas coal seam gas is essentially methane only—it might have some methane but nothing else. The recovery

techniques for shale gas and coal seam gas on the surface can look similar. So in our area we drill horizontal wells into the coal to recover the gas from the coal. Shale gas also extensively uses horizontal wells but the difference there is that they will then do multiple fracks along that horizontal. So the horizontal well alone is not sufficient to get sufficient area to get access to the gas, so they will go in and do multiple large fracks in most of the shale gas wells.

The Hon. RICK COLLESS: I note from your submission that Metgasco has not used fracking at this point in time. What are the comparative pressures and techniques involved in fracking shale compared with fracking coal?

Mr O'BRIEN: Again, the pressures that they will use in shale are a bit beyond me but typically what you have got to do is get above the pressure to make the rock expand. The deeper the reservoir is the higher that pressure is. If you look at coal seam gas, which is typically 500 metres down to 1,000 metres, the pressures you need to generate a frack is lower than the pressures you need to generate a frack in shale.

The Hon. RICK COLLESS: At the same depth?

Mr O'BRIEN: If they were at the same depth you would use similar pressures but they are not. They are typically are at different depths. Shale is at 2,000 metres so the frack pressure has to be much higher than the coal, which is shallower. The other thing that appears to be very different on the data that I have seen is the amount of water and sand that you need to make these fracks work. A typical frack in a coal seam is one-tenth of what you might have for a shale gas frack.

The Hon. RICK COLLESS: The Committee has heard a lot of comment about what happens when gas bores are decommissioned and about the lifespan of the decommissioned bores, particularly in relation to the degradation of the steel and the concrete. Will you give us an idea of what happens in the longer timeframe to a decommissioned bore, particularly in relation to the degradation of the steel and concrete in it?

Mr O'BRIEN: I think what you have to do is look at the history of the oil and gas industry. The oil and gas industry has been operating for more than 150 years. So there is extensive history of decommissioned wells and the industry is not seeing a lot of historical failures of the decommissioned wells. Depending on what well you are talking about, typically you will take out production equipment and you might take out production tubing but then you would be left with your surface casing remaining in there. You will cement up the bore of the casing. I would expect the steel casing to exist in a reasonable uncorroded state for an extensive period of time. To get corrosion on steel you actually need oxygen and by sealing up the well what you have done is limited the potential for oxygen to promote the corrosion. What you might get is oxygen coming in from adjacent waters but what you will find is that when steel corrodes it will actually expand because it goes to the iron oxide state. So I would expect even if the steel did corrode that the rehabilitation would actually get better because of the expansion of the materials.

The Hon. RICK COLLESS: What about the standard of the concrete that is used to fill the bores? Is there a particular grade of concrete required?

Mr O'BRIEN: There is a particular grade of concrete; it is not a high-strength concrete. What you are looking for is a concrete that can flow and fill all the voids. You are not looking for strength at all; you are looking for it to be impermeable. So it does not carry gravel or anything else like that. It is really cement slurry.

The Hon. SCOT MacDONALD: Some 300 voluntary agreements. Mr Shields, can you tell me what happens when you come against someone you would like to access but they do not agree?

Mr SHIELDS: The statistic you have quoted is correct. To date we have around 300 voluntary access agreements. History to date is that if a farmer did not wish to proceed then we have respected those views and we have looked for other landholders to participate in the industry.

The Hon. JEREMY BUCKINGHAM: My first question relates to coexistence with other industries. Norco, a large dairy cooperative in northern New South Wales employs hundreds of people directly and potentially thousands of people indirectly, have said that they cannot coexist with coal seam gas. Will you rule out coal seam gas on dairy properties in your areas of operation?

Mr HENDERSON: Firstly, I cannot speak for Norco but I have not heard them say they cannot coexist. We read their—

The Hon. JEREMY BUCKINGHAM: I have heard them say that. Excuse me that is a challenge.

Mr HENDERSON: May I answer the question?

The Hon. JEREMY BUCKINGHAM: You can but you cannot challenge that. They have given sworn testimony to that effect. If you are challenging that, I can provide the *Hansard*. Their submission to this inquiry was that the Committee would have to choose between the industries. The question is will you rule out coal seam gas on dairy in your areas of operation.

Mr HENDERSON: We have met with Norco and discussed the matter with their management since then. It was a very useful conversation, a very respectful conversation and a sensible one. Greg McNamara from Norco was at the meeting with had in Lismore this week and the four points he made were: ensure that the gas industry behaves responsibly, that is, is regulated; that landholder rights must be respected; there should not be any drilling within 200 metres of homes, which is already regulation; and that there should be community engagement. He certainly did not take the opportunity in front of us of saying that. Furthermore, we already work with dairies—we already have access agreements on dairies. The point we have made with Norco and other places is that not all land is the same. If you are on land that has low productivity and has minimal other uses, the way you drill your wells, where you site them and things, how much you pay for the land is different than if you are on a highly productive area such as a dairy. The point I made to him was—

The Hon. JEREMY BUCKINGHAM: That is fine. You have answered the question.

CHAIR: Mr Buckingham, you have asked the witness a question and the witness should be allowed to complete his answer.

The Hon. JEREMY BUCKINGHAM: Well, if he would answer the question.

Mr HENDERSON: I am answering the question. The point is that if we look at a dairy and it is a smaller area of land and the useful land is far more important then we have to be far more careful in working with the landholder to make sure we minimise that footprint. We will do that. Will do our best to get a voluntary agreement and compensate accordingly.

The Hon. JEREMY BUCKINGHAM: You said earlier in your sworn testimony that Brad Mullard, a senior bureaucrat from the Department of Trade and Investment, Regional Infrastructure and Services, said that there has been "no example of water being contaminated by CSG activity". Is it your sworn testimony that in New South Wales there is no example of water being contaminated by coal seam gas activities? I would like each of you to answer that question.

Mr HENDERSON: That is what I heard Mr Mullard to say on Monday. I remember a conference on 31 May at Brisbane where the Minister responsible for the environment up there at that time was Cathy Jones, I think it was, and her—I have forgotten—Mr Brier, the equivalent of Brad Mullard in Queensland, made the same comment concerning the number of monitoring wells around Queensland. They drilled monitoring bores all around the coal seam gas wells in Queensland and he made the same comment there.

The Hon. JEREMY BUCKINGHAM: Your sworn testimony here is that you have relied on that. The impression you gave is that you concurred with Mr Mullard's comments, and I will have the opportunity to ask Mr Mullard about that next week. But is it your sworn testimony here that there is no example of water being contaminated by coal seam gas activities in New South Wales?

Mr HENDERSON: Not to my knowledge.

The Hon. JEREMY BUCKINGHAM: In terms of your activities for Metgasco there have been no incidents of pollution of either surface or ground water in your activities?

Mr HENDERSON: Not to my knowledge.

The Hon. JEREMY BUCKINGHAM: That is a question to all of you. I would like each of you to answer it.

CHAIR: It is the responsibility of Mr Henderson to decide who will answer questions on behalf of the company. We will leave that to Mr Henderson.

The Hon. JEREMY BUCKINGHAM: So I am not allowed to directly ask Mr Shields, Mr O'Brien or Ms McLoughlin if that is the case?

CHAIR: If Mr Henderson does not wish them to answer that question he is within his rights.

Mr HENDERSON: I am giving my best advice. If Glenda, Mick or Richard has any different experience to mine then they are welcome to comment.

The Hon. JEREMY BUCKINGHAM: Mr O'Brien has there been any example of water pollution from coal seam gas activities in your operations?

Mr O'BRIEN: I am not aware of any contamination of surface waters or aquifers in our operations.

The Hon. JEREMY BUCKINGHAM: You said earlier on that there was an economic benefit from this and there was also a suggestion that you are planning to provide gas to the proposed Richmond Valley Power Station. The other proposal you have suggested that you are interested in executing is an export liquefied natural gas project—what is known as the Lions Way Pipeline. Your submission states that it is looking to produce and export 1.5 million tonnes per annum. How many coal seam gas wells do you require to make that a viable proposition?

Mr HENDERSON: There is a question of the size of the market and there is also a question of the productivity of the wells. The size of the market is clearly an important factor, but so too is productivity, and that is why we have not gone out with a number. Clearly, if a well will produce a million cubic feet a day rather than 100,000, you need ten times fewer wells. We have not gone out with numbers on that simply because we have a lot more work to do to establish exactly how many wells we would need.

The Hon. JEREMY BUCKINGHAM: Considering that you have been established for some time and you have assessed the productivity of your wells as they are, you have done no modelling on an average across those wells of how many wells you would need to supply 1.5 million tons per annum?

Mr HENDERSON: Clearly we have done modelling, but we are certainly not at the point of making the final investment decision on that and we would anticipate having more data before we get there. It is not the sort of figure that we generally quote until we have actually gone through the process and are ready to make some sort of development application or commitment.

The Hon. JEREMY BUCKINGHAM: So you have done modelling of how many wells you may require?

Mr HENDERSON: We have done internal modelling—

The Hon. Dr PETER PHELPS: Point of order: It would seem to me that we are now delving into a public examination of matters which are of commercial-in-confidence in relation to the operations of this company. While they may have done modelling, I do not see it provides any benefit if they tell their competitors exactly the productivity of the wells that they are currently looking at or could be implementing in the future.

CHAIR: I remind all committee members that witnesses who come to these inquiries do so as guests of the Parliament. They are here to give evidence. If Mr Henderson does not wish to give out information which he feels may be of detriment to his company—or of benefit to his company—particularly in terms of commercial information, he is quite at liberty to decline to answer that particular question.

The Hon. JEREMY BUCKINGHAM: The issue I am interested in is not productivity, which may be commercial-in-confidence; it is the number of wells.

The Hon. Dr PETER PHELPS: How can you work out the number without the productivity of each well?

CHAIR: Order! I am sure the witness is capable of answering the question.

The Hon. JEREMY BUCKINGHAM: In your estimation, would you need more than 500 wells to deliver that type of project?

Mr HENDERSON: Mr Buckingham, I am sure you have a lot of data from other operations to gain your own view of that, but certainly 500 wells would be in a reasonable range. The other thing you need to take into account is the nature and type of wells. Clearly, we are going to be trying to minimise the footprint of our wells, and it is not so much the number of wells but how many sites you need to have. If we can drill six or ten wells from one site, it will look largely like one well. If you are trying to get the impact and basically what disruption there is going to be to the land area, it is the case of the number of wells and our ability to get as many from one site as possible. A figure we have quoted a number of times is that we would expect to be able to take no more than 1 per cent of the land and certainly less than 2 per cent. That is the sort of measure that we will be taking in terms of managing the success and effectiveness of our operations.

The Hon. JEREMY BUCKINGHAM: Speaking of 2 per cent, if I told you that 2 per cent of the water you are drinking at the moment contained brake fluid, caustic soda, NF-6, GEL stabiliser, potassium chloride, ethanol, sodium bicarbonate and all the other chemicals you have listed, would you be concerned? Would you continue to drink that water?

The Hon. RICK COLLESS: Point of order: That is purely a hypothetical question and I do not think it should be answered.

CHAIR: The question is out of order.

The Hon. JEREMY BUCKINGHAM: You say in your submission that no chemicals or drilling fluids are discharged into the environment. Are you saying that you retrieve 100 per cent of all your drilling chemicals and fracking chemicals from coal seams?

Mr O'BRIEN: We have not done any fracking in coal seams yet, but certainly drilling fluids we recover. One of the things you have to do with coal seam gas is you have to dewater the well. You recover all your drilling fluids plus the water from the well.

The Hon. JEREMY BUCKINGHAM: One hundred per cent—there is absolutely none left in the coal seam?

Mr O'BRIEN: One hundred per cent.

The Hon. JEREMY BUCKINGHAM: In relation to drilling chemicals, you say:

> All of the above chemicals are removed from Metgasco operations and placed in approved industrial waste disposal sites.

Could you expand on what those approved industrial waste disposal sites are?

Mr O'BRIEN: Our water handling currently is that our water is disposed of in above-ground holding ponds. We have two styles of pond, one that takes produced water and another one that takes drilling fluids. When those ponds are decommissioned, we will sample the water and any sediment in those ponds, and then we will dispose of both of those according to the quality at that stage.

The Hon. JEREMY BUCKINGHAM: Are they evaporation ponds?

Mr O'BRIEN: They are holding ponds. In the Casino area you get significant rainfall; you also get some evaporation. Over a 12-month period you will get net evaporation out of those ponds.

The Hon. JEREMY BUCKINGHAM: The only way you deal with produced water and drilling fluids is to hold them in those ponds?

Mr O'BRIEN: Currently, for our production pilots, that is the case, but when we go into production we will look for a beneficial use for the water. We have done a number of studies so far and there appear to be a good range of options for disposing of our water. Our production water, on the knowledge we have so far, is of

relatively high quality. It is good enough for stock use as it is, without any upgrading, and then there are multiple parts to upgrade it so that it becomes a fully usable water source.

The Hon. GREG DONNELLY: Thank you for coming today and providing us the opportunity to ask questions with respect to your submission. Firstly, I go to page 1 of your submission, specifically the bottom of the page, where it refers to industry regulation. As we have been travelling around and gathering evidence it has been explained to us by people with expertise in this area, particularly with respect to mining law, that we have the base Mining Act in New South Wales and on top of that there has been the development of the Petroleum (Onshore) Act. As I understand the explanation that has been provided to us, that Act was designed more to provide a legislative framework for gas extraction from what would be large gas deposits under the earth, and Moomba gas fields have been used as an example. With respect to the new form of coal seam gas mining, we do not appear to have legislation that has been developed with that particular form of mining in mind. It is being regulated off the back of legislation which was never specifically designed for it—and that is not a criticism, it is just a statement of historical fact. With that in mind, is it your submission that, notwithstanding what I have just described, the regulatory framework for coal seam gas mining is essentially right, as you see it, and therefore there is no need to develop specific legislation or, alternatively, refine or amend existing legislation specifically to cover the coal seam gas mining industry?

Mr O'BRIEN: I am happy to talk a little bit about that. I have worked in both Queensland and New South Wales, and there are differences in the legislation. The legislation in both states grew out of regulating the conventional gas industry. However, both are remarkably good at regulating the coal seam gas business. There are issues at the margins in terms of some of the reporting requirements and a few issues like that where the industries are slightly different, so in the area of the regulations and some of the attachments to the regulations they certainly could be improved by coal seam gas-specific changes, but generally the legislation itself works reasonably well. The safety issues, and issues about impact on the environment and people are not really all that different, and that is why we say the coal seam gas industry is not a new industry, it really is just an extension of the conventional gas industry, so it is not as if it is something fundamentally different.

Mr HENDERSON: We always find it strange when we hear people saying it is just mining because, at the end of the day, the oil and gas industry, which is the bulk of my 30 years in the business, is drilling a well into the ground. When you drill that well, you have to manage the entire time to the bottom to make sure you do not get flow in and out of different reservoirs and aquifers which go down to it, so you have to put steel and cement down to isolate them. When you are looking at a conventional well, which is typically up to 5,000 metres deep, the pressures are way above anything in coal seam gas. The fluids are far more complex—you can have a full range of hydrocarbons, methane through to heavier hydrocarbons, you can get H2S and CO2 or just methane. In a lot of cases, coal seam methane is a very simple form of the oil and gas industry. That is why, for someone in the oil and gas industry, we see the risks, in comparison, as low or modest. I do not think any form of regulation is ever perfect. What happens, if you monitor the industry and find that there is something which is not working as well as you would like, you refine and change your regulations, and I have no doubt that, in the New South Wales regulations, they can be streamlined and improved, if nothing else the decision making.

Ms McLOUGHLIN: If I can make one other point, I think that people are not fully aware of the extent of regulation already within the New South Wales oil and gas industry. I have brought along today an example of a well completion report, which is a report that is written at the completion of every single well that is drilled and which is provided to the department. It is a very extensive analysis of everything that we have done, the way in which we did it and the way that we reported it to the department, and that is required for every single well that we drill. The information provision and regulatory framework is already very extensive and we are very careful to ensure that we are adhering to it, but that is not to say that regulatory frameworks cannot always be improved.

The Hon. GREG DONNELLY: As we have travelled around the State—whether you accept this proposition or not—the issue that has been repeated to us is that for people to feel comfortable, getting to the point of supporting the industry, if it is to proceed, they need to be satisfied that it is appropriately regulated. That is why, whether we like it or not, and I say that in a neutral sense, having clarity around the regulation, that the regulation is such that it is able to be enforced—and probably proving to the communities that you work in that it is being enforced—is important in terms of addressing the concerns that you might say are not real but perceived, but nonetheless are operating in some people's minds.

Mr HENDERSON: We fully accept what you say, that perception is probably more important than fact in lots of places, and there is a lot of misinformation out in the community. We have been very supportive

of the Government's effort to improve regulations, not only in terms of what is happening but the appearance of being there to demonstrate that confidence. We know that not only do we need to do a good job, we need to be able to demonstrate it. There is nothing better in that respect than having a Government that is clearly seen as being strong, setting good regulations and having the number of people to go and police it in terms of on-site inspections and regular audits. It is in our interests and we support it 100 per cent.

The Hon. GREG DONNELLY: I refer to the top of page 2 of your submission, which deals with moratoriums. So that we are absolutely clear, I understand that your position is that you believe there is no case for moratoriums, whether we are talking about further exploration or production activity.

Mr HENDERSON: Yes. We believe the industry is already understood and we already have the science behind it. Furthermore, it is not clear to us what we do during a six or 12-month moratorium. Our Richmond Valley power project has already been through the part 3A approval process. A very thick submission is available on the New South Wales Government website. Community consultation was part of that process. That submission goes through noise, flora and fauna, koalas, native title and so on. We looked at every well bore within 10 kilometres of Casino, which no-one had done before we went in. There are about 400-odd wells and we understood every different aquifer they went into.

We demonstrated that our coal was below that and undertook an independent study to show that it was unlikely that there would be any groundwater impact. Those studies are all in place and are all specific to our area. Having a moratorium covering the Great Artesian Basin, which we are not part of, would do very little. Our argument is that reviews and processes are already in place. For example, before we can drill a well in the exploration phase we must get approval using a document called a "review of environmental factors". Before we get into development, there must be a complete review process both with government and the community. To impose a moratorium will simple put the industry on hold for the period it is in place. It will not increase knowledge.

The Hon. GREG DONNELLY: On page 27 of your submission you comment on royalties payable to the State. I invite you to elucidate or to comment on that part of the submission.

Mr HENDERSON: These figures and comments are estimates we made at the time. I do not think we have any reason to change them at the moment.

The Hon. GREG DONNELLY: Do you have any particular comments to make about what has happened in Queensland as you understand it?

Mr HENDERSON: We follow what happens in Queensland through industry associations, reading and so forth. We have not come prepared to make a comment on the Queensland situation.

The Hon. GREG DONNELLY: I refer again to page 2 of your submission and the comments under the heading "Communications". The last dot point states:

> Metgasco also believes the government has a role in explaining to the community the benefits of the industry and the safety measures that are in place.

Can you elucidate on that point and explain precisely what you have in mind?

Mr HENDERSON: It is very similar to the point you were making. We all know there is concern in the community. The industry started on the back foot and did not anticipate the effect of movies such as *Gasland* and so forth. We are on the back foot now in terms of trying to explain to the community that we are a safe industry and that there are benefits to everybody in our proceeding. From our point of view, of course, we put our arguments up and do our best, but there is always the feeling that we could be arguing in self interest. Apart from doing a good job in terms of regulating and enforcing the law and standards, which the Government needs to do, we also think that it needs to be able to demonstrate to the community that it is playing that role.

We certainly support the initiatives of Minister Hartcher this year in terms of tightening the regulations and so on. We support that approach because we want the community to know what we know; that is, that the Government is setting standards and expecting us to perform. Again, it is a case of not only doing the right thing but also being able to demonstrate to the community that the Government is playing that role. That is why we support the idea of a coal seam gas commissioner. Having someone in government who knows how government

works and who can explain to the people how the regulations fit together and the checks and balances would add value.

CHAIR: Mr Henderson, I thank you and your team for giving evidence to the inquiry. Is the large document you have on the table a sample document that you could provide to the Committee so that we can see the extent to which you must report on each of the wells?

Ms McLOUGHLIN: This is a typical well completion report for a coal seam gas well.

CHAIR: To whom is it provided?

Ms McLOUGHLIN: It is provided to the Department of Primary Industries on the completion of each well.

CHAIR: We can obtain a copy of it from the Department of Primary Industries.

Ms McLOUGHLIN: I also suggest that you ask for an example from a coal core exploration well, because I think you will find that the drilling activities are identical but the reporting requirements in the coal legislation are much less intensive than those in the Petroleum (Onshore) Act. The same report about a coal core well would be about five pages long.

CHAIR: Once again, I thank you, Mr Henderson, and your team for providing evidence.

(The witnesses withdrew)

JACINTA CATHERINE GREEN, Stop Coal Seam Gas Sydney, affirmed and examined:

CHAIR: Do you wish to make a brief opening statement?

Ms GREEN: I am a local resident of St Peters and a member of Stop Coal Seam Gas Sydney, which was formed in response to finding out that an exploration coal seam gas well had been approved for our suburb under Petroleum Exploration Licence 463, which covers the majority of the Sydney Basin. That petroleum exploration licence stretches from Coalcliff in the south to Gosford in the north and from the eastern beaches to Blacktown and covers more than four million people. I am also currently completing my doctorate at the University of New South Wales in marine chemical ecology. However, I am here as part of a community group.

I make it clear at the outset that we are fully aware of the difference between an exploratory well and a production well. We believe that production wells should be considered as a possible impact or outcome of any exploration well. Given that data are already known from previous exploratory wells in the nearby Eveleigh neighbourhood, there is a high probability that a production well will be established at St Peters, and that was confirmed in a meeting with Dart Energy.

We also have grave concerns about the approval and renewal process and the understanding of the current governance around those processes. I heard Barry O'Farrell speaking to Alan Jones on radio this week. Among other things he said that communities should have a say. Why then has the expired licence for Sydney gone into the renewal process? As a renewal, the licence remains an existing licence under the legislation, which provides the community with no avenue for input. At the very least, the licence should be cancelled and reissued. That would allow for community consultation and input, which the Premier highlighted as being necessary.

As a renewal, the community has no means of raising issues about the initial inadequacy of the approval documents. As a renewal, the community has no means of raising issues about the review of environmental factors that remain unanswered by Dart Energy. As a renewal, the community has no means of raising concerns that the licensing conditions have been breached not once but twice by the companies involved. As an existing licence, the community was not informed that the renewal was underway. If the Government is serious about dealing with coal seam gas issues, wide licences should be cancelled and then, if appropriate, reissued.

I have with me documentation detailing what has passed for community consultation with our group and documents which were originally unavailable to the community but which were eventually obtained under a Government Information Public Access request. I hope they highlight the ongoing inadequacy of the Government's response to community concerns. I draw the Committee's attention to a letter received just last week from the Department of Trade and Investment, Regional Infrastructure and Services that appears to have no relevance to the issues raised in the original letter, which is also supplied. Attention is drawn to the presence of a review of environmental factors [REF] that apparently addresses all potential impacts of the proposal, including the impact on the community. However, we are still waiting for Dart Energy or the Government to respond to questions and concerns raised about that REF. Those questions were given to Dart Energy on 2 June and to the Minister for Planning's office on 1 August.

The letter also draws attention to the strategic regional land use policy. As far as I can determine from the government website, no strategic regional land use plan is being developed for the Sydney Basin. I submit that it already has a strategic regional land use plan and that no amount of policy is likely to change the focus of the Sydney Basin as an urban environment. The question remains that if the industry is safe enough to go ahead in St Peter's and if the need to exploit gas resources in the Sydney Basin is so great, presumably we will need a gas well in every suburb, if not every local government area. If that is not appropriate, why is it considered appropriate for St Peters? In summary, if the Government is serious about community consultation, given that the justification for the licence is now invalid, given the inappropriateness of the approval documents, given that the licence conditions have been breached twice and given that the licence has expired, it should be cancelled and then, if appropriate, reissued under the new legislation.

The Hon. GREG DONNELLY: Thank you for appearing before the Committee today and for providing us with the opportunity to ask you some questions. I will quiz you about community consultation because as we have travelled around the State it has been repeatedly raised by communities that for one reason or another feel aggrieved by what they see as inadequacies in that regard. You have broken it down from the

point of view of Stop Coal Seam Gas Sydney into the company's consultations with the community and government consultation.

Ms GREEN: Yes.

The Hon. GREG DONNELLY: Is that what you have in mind when you talk about consultation? Is that your model? Do you believe there is a role for the proponent to consult and also that the State Government should consult? Is that what you have in mind?

Ms GREEN: It certainly was not initially what I was expecting to have to do. Document No. 2 is a timeline of the community consultation we have had with Dart Energy and different government departments. It is not a comprehensive list of all the communication we have had; it is a list of my personal communications with either the company or the Government. There is meant to be a community consultation database established by the company but we asked to see it. It presumably also includes all of these things because it is meant to be there, it is meant to be documented as part of their REF.

The Hon. GREG DONNELLY: It is your understanding that there is a requirement of sorts whereby the company needs to keep a list of its meetings, its exchanges with community and so on?

Ms GREEN: Yes. On page 27 of the review of environmental factors it actually says that a community consultation database had been established and was maintained. So that is straight from Jason Needham who was working for the previous company but is still working for the company that has the licence now. We assumed that that community consultation database was still there. The reason I started talking to government departments and started ringing up and making a pest of myself was because we were not getting the answers out of Dart. We tried. We tried for months to get answers and we are still not getting the answers that we want. We have not even been asking the big picture questions. On 2 June we sent them a question specifically about the REF and—

The Hon. GREG DONNELLY: There were your original endeavours to consult with the company and obtain information and, if I understand your submission, that was inadequately dealt with from your point of view: you could not get answers to questions you raised. Is that right?

Ms GREEN: That is correct. We sent them the questions of 2 June and they were very basic questions. How many trucks are we likely to have in our street? Are you willing to put air pollution monitors in, given that it is a residential neighbourhood? How much water are you going to be trucking in and out of site? What are the noise levels going to be? What is the air pollution? The questions were specifically about the proposal. So we sent them those questions on 2 June. The whole time this was going on we were attempting to arrange a community consultation meeting and there were ongoing attempts to get them to answer these questions or to arrange a meeting.

It took months. On 13 July, after starting about April, we finally got Dart Energy to agree to a date for a community consultation. They suggested the date, 16 August. Again as part of that community meeting we tried to get from them the answers to those questions so that we could actually be a little bit more informed when we had that community consultation. On 3 August I finally got a document back from Dart Energy that addressed the issues that we had raised in the REF. We actually sent that back the next day asking them to clarify some of the questions and some of their answers that they had given. They had actually deleted 17 of the questions from our list of questions that we had sent them.

The Hon. GREG DONNELLY: When you say "delete", did they just not answer them?

Ms GREEN: No, they deleted them out of the document. I have got a copy of the response I sent back the next day asking for clarification and I have also included a copy of the first 17 questions that were deleted.

CHAIR: They are in the documents you have tabled?

Ms GREEN: They are in the documents, yes. That is documents 6 and 7. Document 7 is the questions that were deleted and document 6 is the partial responses that we received. They changed the wording of some of the questions before they answered them and some of the questions they just did not answer. In a lot of the questions we had specifically asked that they talk to us about production because we had already by this stage

established that production was quite likely at the St Peters site. Most of the questions were not answered in regard to the possibility of a production well.

We finally got to have our meeting. As I said, on 16 August we finally managed to have our community meeting. We turned up there. After months of trying to organise this meeting, after them setting the date, we turned up to find out that Robert de Weijer had to leave early to catch a plane, which we found completely arrogant and—

The Hon. GREG DONNELLY: He being, as you understand it, the chief executive officer of the company?

Ms GREEN: The Australian manager of Dart Energy is our understanding. So he was the one that picked the date. We did everything we possibly could to try to make this happen because we knew there was a lot of concern. To leave halfway through a meeting is just appalling.

The Hon. GREG DONNELLY: How long was he present at that meeting, approximately?

Ms GREEN: About an hour. He left during the question and answer when people were wanting to ask questions.

The Hon. GREG DONNELLY: Were there other representatives of the company there available to answer questions?

Ms GREEN: There were, yes. But the community was not happy.

The Hon. GREG DONNELLY: There is probably more we can say about the conversation with the company but can I move to this issue of consultation with government departments. How have you discovered—if I could put it that way—which departments to contact and who to speak to within those departments about the issues that concern you? Have you been able to go to a single source to find out where to go and who to speak to, or has this been a case of discovery for you?

Ms GREEN: This has all been a brand new experience for me. There is a group of us. It is a very large community group. We quite regularly get 200 or 300 people turn up to events. There is a lot of input. But we sat around and we thought about what issues and what questions we would like answered. We started off writing directly to the Ministers that we thought were appropriate. We wrote to Brad Hazzard because we know that production wells come under Planning. One of our questions has always been: If you are not prepared to let production go ahead what is the point of an exploration well? If urban areas are considered too big a risk for a production, then why should we allow exploration? That is why we wanted to speak to Brad Hazzard's office. We have written to Chris Hartcher's office on many occasions. There is a press release in here somewhere that has actually got a list—

The Hon. GREG DONNELLY: Sorry to interrupt, but I do not know if there is any significance in you saying "on many occasions". Have you received responses from the Minister's office?

Ms GREEN: I have had meetings cancelled and I have had no response. I have had a response from Brad Mullard on a letter that I sent to Brad Hazzard but I have had no response from the letters I sent Chris Hartcher's office.

The Hon. GREG DONNELLY: Approximately how many letters do you believe you have sent?

Ms GREEN: I have sent at least three. I have had a couple of email conversations with their staff. We did have a meeting arranged at one stage. I was given four hours notice that the meeting was cancelled. When I rang up to clarify it I asked if the meeting was cancelled or postponed and I was informed that the meeting was cancelled. I have since then sent a follow-up email asking if we could get a date rescheduled and I have still not had a response to that.

The Hon. JEREMY BUCKINGHAM: Ms Green, how did you find out about coal seam gas in your suburb?

Ms GREEN: I saw an article in our local newspaper for a town hall meeting that was organised after Cate Faehrmann from The Greens had discovered the St Peters drill site approval documents when she did a call for papers about coal seam gas in general.

The Hon. JEREMY BUCKINGHAM: How far away do you live from the St Peters exploration/production site?

Ms GREEN: I live about 500 metres away from the proposed site. It would probably be a bit closer if you went as the crow flies.

The Hon. JEREMY BUCKINGHAM: Prior to that you had no notification that there may be coal seam gas drilling in your neighbourhood?

Ms GREEN: No, I had no idea and even no comprehension that something like that would be considered.

The Hon. JEREMY BUCKINGHAM: Have you been able to establish with Dart Energy exactly how many wells they propose? They hold a massive petroleum exploration licence across Sydney. Have they given you any indication in correspondence regarding how many wells they plan to drill and where some of the potential sites are?

Ms GREEN: Let me get my dates right. We had a small meeting that was just three or four people early on in the piece. It was early in June. We had a small meeting with just a small number of people. We did not keep comprehensive notes, which is why we eventually drew up the questions about the REF and had it in written form. They mentioned a number of sites around Sydney. They mentioned Eastern Creek and they mentioned some sites outside the Sydney basin as well. As I said before, one of the first questions we asked them was whether this is likely to go into production and they said yes. When we have started talking about production wells then they have not given us any answers.

So, no, they have given us no indication. They keep saying it is an exploratory licence and they are doing exploratory wells. They do not want to answer questions about the likelihood of production even though they told us they were fairly certain that production would go ahead. We also note in the variation to work program, which was obtained after it was initially objected to being released by Dart Energy under our call for papers, they had actually requested to go straight to pilot production instead of exploratory wells. That request was denied, but obviously they are thinking about production. The biggest thing that we have struggled with is getting answers. Someone answer my questions.

The Hon. JEREMY BUCKINGHAM: You certainly have asked a lot of questions and there seems to be a deficit of answers. You also said you believed that the licence conditions had been breached twice. Could you expand on that and how you think that there has been that breach?

Ms GREEN: Yes. The original licence issued was a three-year work program. However, the initial licence period was only until the end of the second year, so that was October 2010. It states very clearly in the licence conditions, which I have also included, that by the end of year two they had to have completed seismic surveys, they had to have drilled one exploratory well and they had to have filed a report with the government outlining their progress to the work program. When we did the call for papers from the document we specifically asked for any of those reports; none of those reports were initially or have since been released to us. We are unaware of whether or not those reports exist. Certainly none of that was done.

Their third year work program was conditional on that work program being completed successfully. The third year program ran out on 22 October this year. Again they have not done any work. They have not provided any community consultation and they have had the work program changed. Their licence has now expired and they have completed none of their work program. It is my understanding that part of the granting of these licences is that these companies need to prove that they are capable of extracting the resources for the good of the Crown. That is why they have these licence conditions in place—to prove that they are actually capable of doing this. If they are not actually meeting their commitments then there is a breach of the licence with the government on behalf of the Crown to extract those resources.

The Hon. JEREMY BUCKINGHAM: In your submission you also raised issues regarding noise. Could you expand on that? A key issue is how this industry may or may not coexist and be maintained in an urban area. What is your submission in regard to the impacts of noise?

Ms GREEN: In the original review of environmental factors at the time Macquarie Energy was the name of the company but the review of environmental factors was signed off by Jason Needham who is now with Dart. As far as we understand, he was responsible for the document and is still responsible for the site. They said initially that they would be drilling 24 hours a day and that was acceptable because we are in the flight path. Being from Brisbane, Robert de Weijer probably does not realise that the airport shuts at 11 p.m. and does not open up again until 6 a.m. After talking to them they did agree that they would only do the exploratory drilling for 12 hours a day. But I have had several conversations with other gas companies and they have actually said while it is feasible to only drill and operate 12 hours a day during the exploratory phase, it is completely different when it gets to the production phase.

One of the documents that we got when we did the call for papers from the government was the approval matrix that was the sign-off for the REF. They actually said in that document that community concern about noise was low and there was not likely to be any impacts of noise because there are no sensitive receptors in the area.

The Hon. JEREMY BUCKINGHAM: My understanding is the REF does not have any community consultation in it?

Ms GREEN: No. There is a requirement for community consultation and they have said they would not consult the community on it.

The Hon. JEREMY BUCKINGHAM: You said the review of environmental factors suggested that community concern about noise was low?

Ms GREEN: That is in the approval matrix that was presumably the sign-off for getting the licence.

The Hon. JEREMY BUCKINGHAM: How was that established?

Ms GREEN: I have no idea. What I do know is that of all of the impacts addressed in this approval matrix community concern is considered to be low and I thoroughly dispute that. There is no date on this document but I can tell you that from the moment we found out this was proposed community concern was incredibly high.

The Hon. JEREMY BUCKINGHAM: You do not know how that community concern was established?

Ms GREEN: No. No-one asked me.

The Hon. JEREMY BUCKINGHAM: I am sure. What is the status of the St Peters proposal now? Are you certain of when there is going to be drilling? Has the company said there will be no more drilling? What is the current status?

Ms GREEN: Up until 8 or 9 August we were of the understanding that drilling would have commenced before the end of this year. Roughly about that time, that week, that time frame, Dart Energy came out and said it would not be until 2012. They have since said it will not be until 2013-14. Every time we speak to them we get a different date. What we are concerned about is that the licences seem to be like leases on units: once the licence expires unless it is specifically cancelled it can go on under the existing conditions. We are quite concerned if the Government does not come out and say specifically it is cancelled until it is specifically renewed, they can continue any activity. That site is the only site we know of that they have approval to drill at St Peters. They have changed their mind a lot about that drilling date. I believe they have put it off until 2013-14. I believe that is a true statement by them. I suggest it is because our group has been making a lot of noise because community concern is not low.

The Hon. JEREMY BUCKINGHAM: My understanding from your submission is you have done a lot of study of the industry and you have engaged and consulted with them to the best of your ability: Do you

believe this is an industry safe for urban environments or appropriate for an urban environment and an industry you want to be neighbours with?

Ms GREEN: There are a lot of questions in one there. My biggest concern is the sense of entitlement that the mining companies seem to have that they can ride roughshod over everybody else. When we ask questions they delete the questions. I do have a scientific background. I am doing my PhD. I understand a little bit about data. I also notice there is a huge lack of it. A lot of the groups have been asking for more data on some of the impacts. We asked Dart Energy if they would be prepared to put in noise monitors, air pollution monitors and seismic activity monitors around the area, given that it is so close to so many houses. St Peters is one of the oldest parts of Sydney. My house is only three metres wide and you have a lot of people living very close together. We thought having these air pollution monitors around the site to get the data would be beneficial to the whole industry. It would give peace of mind to the community, it would give the industry and Government data that they could decide yes or no as to what areas this level of air pollution is suitable for, and Dart said, no, that would add to their cost and they would not be interested in installing air pollution monitors. We found that appalling. If you are not prepared to do the simple measures to give us the data to prove that it is safe then what are you trying to hide?

The Hon. JEREMY BUCKINGHAM: Did Dart say that formally? Did you get a letter to that effect, or was that something communicated to you verbally?

Ms GREEN: That was communicated verbally. It may also have been in the questions we sent back or the questions they deleted. It has been a while since I reviewed those questions. They said to us verbally on numerous occasions they would not be prepared to put in air pollution monitors—which baffles me, it is data. Show me the data and I will be quite happy. That is one of the reasons I got so heavily involved. We asked: Have you got any data to support that? And their answer was, no.

CHAIR: Could I get a point of clarification from you, Ms Green? You referred on a number of occasions to a call for papers. Do you mean freedom of information?

Ms GREEN: I put in a Government information public access request.

The Hon. SCOT MacDONALD: Your submission relies fairly heavily on information from the United Kingdom, United States and Indonesia but we have Camden that has been going for 15 or 16 years. Have you had access to that data to see how it has progressed in not as dense an urban environment but still an urban environment?

Ms GREEN: I asked Dart Energy if they could provide data from other companies and they have not got back to me. Yes, we are asking questions, we are not getting answers.

The Hon. SCOT MacDONALD: The implication of my question is the overseas material is interesting but we have local history here and it has gone back an extensive period of time. Do you think your submission might have been useful if you had included Australian local figures?

Ms GREEN: If I could get them. I asked our local mining company and I tried to ask the Government. Given that I am a part-time university student and part-time worker I do not have massive amounts of time but I take every opportunity to try to learn and I go to the source. I go to the mining company web sites and look at what is available. I am not sure if Metgasco is still here but I spent two days last week at a mining forum where I spoke extensively to Peter to try to get some of this data. If the data in our submission is from overseas that is the only place I could find answers. That is one of the problems. I have been asking questions to the best of my ability, given that this is not my industry, this is not my field and I have never done anything like this before, but it is incredibly hard to get answers.

The Hon. SCOT MacDONALD: Evaporative ponds have been banned in New South Wales.

Ms GREEN: I believe they have been banned if there is no other method.

The Hon. SCOT MacDONALD: I think they are banned.

Ms GREEN: In the review of environmental factors for St Peters at one stage they talk about evaporative ponds and another stage they talk about tanks. We asked them to clarify: Are you going to use evaporative ponds or tanks? They were the sorts of questions we were asking Dart.

The Hon. SCOT MacDONALD: In your submission you say that 4 per cent of Australia's land can be deemed suitable for agriculture. Probably what you are referring to is prime agricultural land?

Ms GREEN: The submission was written by a number of people so quite possibly, yes. That could be clarified.

The Hon. RICK COLLESS: Ms Green, on page 8 of your submission you refer to a landowner reporting that there was a mysterious odour wafting through the farm south of Chinchilla. Residents describe it as burning oil. You go on to say that the landowner lives about six kilometres from the Linc Energy pilot plant and spends most of his time outdoors.

Ms GREEN: Yes.

The Hon. RICK COLLESS: Are you aware of that statement?

Ms GREEN: I am aware of it in one of the documents and I am aware that it came from a newspaper report.

The Hon. RICK COLLESS: Are you aware, then, of Linc Energy and what they do?

Ms GREEN: As far as I know they are doing underground coal gasification which is somewhat different to coal seam gas.

The Hon. RICK COLLESS: It is not somewhat different, it is completely different.

Ms GREEN: It is incredibly different. The point we are trying to make is whether it is related or not in an urban environment we need to be cautious, and things like air pollution monitors would be useful to reassure the community. That is anecdotal evidence that came out of a newspaper report which is something we have been struggling with because we have been struggling to find data. We have a large diverse community and it is only realistic to understand that a lot of people in the community are going to take information from the media. We try not to encourage that. We try to make sure we have scientific research and data to talk about what we are saying. I spend a lot of time on Facebook and a lot of the time, if you look at my social activity, is talking to people: Have you got the report they are talking about? There is a lot of fear in the community and a lot of it is because it is hard to find the real documents. It is anecdotal evidence but it is anecdotal evidence of why people are scared and why people are asking why a gas company would not say it will put in air pollution monitors.

The Hon. RICK COLLESS: That is what this inquiry is about, to separate the fear and emotion and put the facts on the table and make sure we make our decisions based on the facts. I wanted to make sure you did understand that difference.

The Hon. Dr PETER PHELPS: St Peters is quite a nice part of the world these days. Do you know Sydney Park?

Ms GREEN: Yes, it is 70 metres away from the site.

The Hon. Dr PETER PHELPS: Having grown up in Camperdown I know it quite well. Are you at all concerned about the possibility of existing methane extraction devices which take in the existing landfill on the tip where the site originally was?

Ms GREEN: We are excited about the opportunities of harvesting methane from rubbish tips.

The Hon. Dr PETER PHELPS: But not methane from coal seams?

Ms GREEN: You have methane coming out of the landfill sites as it is. It would be great to be able to harness that rather than having it go into the atmosphere.

The Hon. Dr PETER PHELPS: My understanding is it is harvested at the old St Peters tip site, is that not the case?

Ms GREEN: Not that I am aware of. That is not to say it is not happening. The dial-a-dump site has been there for a long time and they could be drilling through anything and we know that is an approved asbestos site. The fact that they may be drilling through and disturbing asbestos as part of the drill site is a massive concern to local residents. What else could they possibly be drilling through? Fifty years ago no-one has any idea what was dumped and is at the moment covered up.

The Hon. Dr PETER PHELPS: You are not at all concerned about methane recovery from the old dump site, which does not involve coal seam gas?

Ms GREEN: We like the idea of harvesting biogas. I personally like the idea. I am not speaking on behalf of the group here. I am quite excited by the possibilities of harvesting methane produced from old landfill sites.

The Hon. Dr PETER PHELPS: You are not worried about potential leaks from harvesting gas from old landfill sites?

Ms GREEN: As far as I am aware at the moment if it is to the harvested it is leaking anyway, so harnessing the methane coming out naturally from the old landfill would be preferable to having it wasted.

The Hon. Dr PETER PHELPS: I agree entirely, but my understanding is that the harvesting of landfill sites does not stop that extraneous methane gas, it takes some of it away but it does not stop the old landfill site from expressing methane itself. I am wondering why you are not concerned about that methane but you are concerned about a commercial operation whose interest it is to extract every last molecule of methane and make sure it does not escape?

Ms GREEN: The methane in the landfill is going to come out no matter what you do. The methane in the coal does not go off, it does not go stale, and it can stay there until we need it, if we need it, in the future. If it is going to escape naturally itself from the coal seam then we have a massive problem on our hands. If methane is coming up naturally from the coal seam then anything else from the coal seam could be coming up and we possibly need to get some equipment in so we can monitor areas and check out not just the methane emissions—if the methane is coming out what else is coming out? That is far broader than the coal seam gas industry. If they did do methane from landfill, and I am not aware of a proposal, I would be asking the same questions: What sort of trucks? Are they trucking it out? Are they putting pipes through? How many trucks are they going to have on our roads? Our roads are tiny. Whatever industry goes on we would like our questions answered and not dismissed.

CHAIR: Thank you for coming and giving evidence. You gather from some of the questions that have been asked that lack of information seems to be one of the major problems that communities are encountering and that, in itself, from our experience, has probably created a lot of unnecessary fear. That fear does not need to be there if the proper information can be provided early enough.

Ms GREEN: Yes and no: lack of information but also to not be ignored when you ask for that information. We have put in considerable effort to try to get answers from any source possible and the fact that we are asking the questions and not getting answers is just as frustrating as not having any information whatsoever. It is probably even more so because we have made such a concerted effort to try to get answers.

CHAIR: It probably raises the level of suspicion as well.

Ms GREEN: It massively raises the level of suspicion. Why do they not want to tell us? A classic example is the documents. Dart Energy repeatedly said they were all about being open and transparent and full of community consultation yet of the 56 documents that were flagged by the Government, Dart Energy objected to 28 of them being released. You cannot on one hand say you are being open, honest and transparent in trying to work with the communities and then on the other hand try to block those communities from getting information.

CHAIR: Thank you for taking the time to give evidence. If there were any questions on notice, and I am not sure there were, we would appreciate answers within 21 days.

(The witness withdrew)

CHRISTOPHER EDWARD MAGNER, Richmond Wilson Combined Water Users' Association, and

DAVID JAMES CLIFT, Richmond Wilson Combined Water Users' Association, sworn and examined:

CHAIR: Before we ask questions would either or both of you like to make a brief opening statement? If you have a written statement you can table it.

Mr MAGNER: I will make a brief opening statement. We represent 450 water users; they are a combination of irrigators and stock and domestic users on the Richmond and Wilson rivers. We are not opposed to the gas industry. We believe farming and the gas industry can live side by side, however there are a number of issues that need resolving in this process. We have listed those issues in our submission and I will refer to those and we can then answer questions. The key issues include that the coal seam gas industry lives outside the water sharing plan. We have just been through the water sharing plan on the Richmond and Wilson rivers and there was no mention of coal seam gas at all in that plan or the water associated with it. There are a whole lot of issues that we would like to elaborate on later regarding how we think that should be linked to the water sharing plan.

Another issue we would like to talk about is wastewater management—which basically ties in with the previous issue I mentioned—in a high rainfall area and the ponds that exist there, to which our friends from Metgasco referred earlier. There needs to be monitoring of the whole system to take the debate away from fear and poor information. We believe there should be fairly intensive monitoring of all stock and domestic and irrigation bores. If you look at the Clarence-Moreton Basin area you will see there are 30,000 stock and domestic and irrigation bores there. Because of all the small holdings on the North Coast there are bores everywhere. In that same area there would be less than 100 government-owned monitoring bores. That has nothing to do with Metgasco and Arrow and those people, who have their own monitoring bores. There are very few government-owned bores. We are not geologists, we are just farmers. We know there are huge differences between the bores we have on our properties. They can be half a kilometre apart and there will be totally different types of water coming out from similar depths. We would like to speak further about that.

Another matter we would like to discuss is the way licensing operates for coal seam gas. Basically it relates to security and whether money will be available if some disaster happens. We would like to see a security system put in place through bonds or whatever, set up by the Government through the coal seam gas industry to cover the potential disaster that we hope will never happen. The next point relates to landholder access rights. We believe there is a need to strengthen the legislation around landholder access rights. We would like to discuss that as well. That is a brief summary of the matters we would like to talk about.

The Hon. GREG DONNELLY: Thank you for coming along this afternoon. Point No. 5 in your submission refers to adequate compensation for landholders. If you have not done this please say so: Have you given much thought to how a framework for a fair and reasonable compensation system might be developed?

Mr MAGNER: We looked at a number of things, especially over the last week. We attended a seminar in Lismore, which was alluded to by Metgasco. One of the big questions that came up on that particular issue relates to disagreements between the landholder and the gas company. The big issue appears to us to be how to arbitrate. Arbitration at the moment is probably the most expensive process. If you end up in the Land and Environment Court that will break most farmers. Most people would be very hesitant about going there. We would be looking at a low-cost method, perhaps something that could be developed in one of the government departments or by going to an outside body, but preferably within a government department, so that issues can be resolved. There are other strategies. We think access agreements should be a two-stage process. One part should be for exploration licences and the other part should be for production licences. Monday was the first time we had heard that there was an exemption for cultivation in relation to a production licence. We are not yet comfortable that we have a satisfactory definition of what that means. As farmers we know what we think cultivation means but we would like to see a definition—if someone here today has a definition that would be fantastic because it is unclear what cultivation means in the exemption. We would like to see that fully spelled out.

The Hon. GREG DONNELLY: On the issue of compensation to an individual farmer, one of the issues that have come up as we have travelled around the State and had farmers give evidence is the confidentiality clauses in agreements that are entered into by a farmer and a company where the specific terms are between the parties and not made public. There are potential scenarios where one farmer agrees to a package

and another farmer agrees to another package with possibly significant differences. Do you think that is a fair system in principle, where farmers negotiate with the companies about what they as an individual property owner think is fair, or do you think there is a better way of doing it. If so, what might that be?

Mr CLIFT: My thoughts are that initially guidelines should be set down that people can work from and that cover all the issues for exploration and production. If I own a block of dirt and it has a couple of surveyed roads, gazetted roads, through it and the Government wants to buy it from me we get an independent valuer in or we get the government valuer. You could reach a stage with these agreements where you could use the government valuer rather than take a series of steps along the track in negotiating with the mining company. If you reach a stalemate at that point in time you might have the right to bring in a government valuer who can do an assessment for you and say what fair compensation is before you have to go to the Land and Environment Court as another step along the way. That is just one of the thoughts I had about it.

The Hon. GREG DONNELLY: The arrangements that some of the farmers have entered into do not just turn on financial payments per annum but include things like repairing and maintaining fences and maintaining graded roads. Given that both of you are farmers do you think that principle is attractive? Should compensation be left open to be more than just a straight financial payment but include other things? Would it be seen as a sensible thing for farmers to have as an option?

Mr CLIFT: The individual circumstances still have to weigh up into the exercise but, yes, I do believe there has got to be an ongoing thing because while ever that gas bore is there, there will be an impact on that farm. Even to the extent of when the gas bore is no longer producing, there has got to be a sign off when the land is rehabilitated to the satisfactory arrangements that the farmer has, so it is reinstated back to what it was. Yes, it has got to be ongoing for quite a period of time.

Mr MAGNER: When we say quite a period of time, we mean an extremely long time because there may be an occurrence of something in the future that is not foreseen at all at the time of the closure of the facility. There would have to be a fairly long drag time, I believe, on that position. I think compensation is still back to the individual.

The Hon. JEREMY BUCKINGHAM: I am interested in your views on the negotiations around access. Most farmers are aware that they have to negotiate the conditions and the compensation for access and ultimately if they cannot reach an agreement they can go to arbitration where that is the same situation. Arbitration is not about if it happens, it is the conditions under which it occurs. Some have said the gas company has the whip hand to some extent. Do you think that creates a disincentive for people to go to arbitration and an incentive for people to sign up?

Mr MAGNER: That is why we put this in for that very purpose because we believe that traditional arbitration which is to the Land and Environment Court is just not viable. It would cost the average farmer more than whatever deal they can strike with the gas company. If we could look at a process, as we explained a while ago, that we could have a low-cost arbitrated system; that we did not have to go into a courtroom as a first stage and then a fall back to the Land and Environment Court then surely we can do a whole heap by just getting two parties to sit down at a table.

The Hon. JEREMY BUCKINGHAM: Firstly there is the cost and then the process and some farmers would think they have better things to do. A lot of gas companies say they have successfully negotiated 20 or 300 or whatever agreements. Do you think some of those agreements have been negotiated successfully by the company because the farmer has thought: There is not much I can do; at no stage can I say no? They either agree around the kitchen table, or agree in an arbitration or lose in the Land and Environment Court. Does the process lead to a situation where more farmers are signing up than would otherwise?

Mr MAGNER: The majority of farmers understand the way Australian law has been set and the fact that they do not own what is below their farm. The vast majority of people understand that. However, they also understand that they have freehold land on top, and these people have to get across the top of their land to access it and in doing that they will cause a considerable amount of disturbance to their farming operation. Therefore, a compensation package or some sort of deal has to be arranged and the only point in the whole process is the access agreement. That is when a lot of farmers in the past have signed off for very little, thinking that they are just going to come in, have a look and go. I think people are more aware now, as this whole process has become more public, that they do and should have the opportunity to negotiate a process. But it is the cost incurred when

the negotiation fails, that is why we are trying to get a process in place that is affordable, something that will not break them.

Mr CLIFT: As cockies, call us what you like, we understand the Government can come in and put a power line or telephone lines across our property. It can resume for railways, roads, et cetera, for the public good. The difference now, as I see it, is that we are selling off a lot of our public resources and they are going to companies. You people, the Government, will grant a mining licence on our land that we really do not have some sort say in, if you like. We are now dealing with a company that has got authority from the Government, the same as if you sold off the power lines and the distribution network, we would have to deal with that company. It begs the whole question of where we are going with that type of structure and the ownership of that structure. It is no longer a government-owned set up that is coming in and encroaching on our land.

The Hon. JEREMY BUCKINGHAM: Yes, I understand that under the licence those people are compelled to exercise that licence for exploration. I am also interested in your views as farmers and landholders about neighbours. It is very important in agriculture to have good fences and good neighbours. What is your view on compensation? If there is a compensation regime should it be expanded to take in the cumulative impacts of an industry like this? Coalmining has a big footprint on a relatively small area. This industry will potentially have a lot of infrastructure spread across the region and a lot more neighbours involved. Should the compensation regime go beyond the boundary of the property on which the infrastructure is located? Should it recognise the impact through a district, region and neighbours?

Mr MAGNER: What you have got to look at is the first part: the impact on the individual farm, how your farming operation is impacted. You can have a neighbour sitting right next door. If he has not got trucks going through his property all the time disturbing his work program then he is not suffering the direct impact that the property involved is suffering. However, there is third party impact that is possible through some other form, whether it be contamination of groundwater or surface water that is outside of that. We stated in our submission that we are looking for a security of a bond to cover that sort of potential damage holistically. We see the impact on property as a disturbance to our farming business.

The Hon. JEREMY BUCKINGHAM: What about property prices? The coal seam gas impacts on the neighbour's property and it may be diminished on your farm, but if it affects the amenity of the area, do you think compensation should be paid beyond that site?

Mr CLIFT: From our point of view at this stage if I do not enter into an access agreement with a coal seam gas company and the next-door neighbour wants to, what is to stop the company putting a bore on his place, horizontally boring and coming in underneath my property, depending on what limitations you put on how far from my boundary? Are you putting in buffer areas to protect that type of thing? I really do not know. If you are drilling 3,000 feet deep they can go a fair bit sideways in the process thereof. To take a holistic approach, as I said, we have addressed it by saying, put a bond there. If you went into an area where you are going to disrupt a whole scenario, say, the sugar industry, which is only a small industry in our area up there, and you alienated sugar lands there which then made the mill unviable because of the reduction in the land, should the sugar industry be able to have a right to claim compensation for the loss of land? That is the question you have got to work out.

The Hon. SCOT MacDONALD: I think you have asked for a lot of good safeguards. Maybe since you wrote the submission you might not be aware that an Aquifer Interference Regulation has popped up now?

Mr CLIFT: We are aware of that.

The Hon. SCOT MacDONALD: It is going to be followed by a bill next year, including three megawatts per annum for which they will need a licence and an agricultural impact study.

Mr MAGNER: One of the things that we wanted out of that was that some of the water that is coming out, especially from Metgasco, at a quality that may be usable. At the moment it is not licensed and that is what we are asking, for it to go into the water sharing plan. They cannot on-sell that for irrigation water because it is not covered.

The Hon. SCOT MacDONALD: I think you are spot on.

The Hon. RICK COLLESS: Are you gentlemen in the dairy industry?

Mr CLIFT: I was formerly a dairy farmer. I was dairying for too long. I gave up dairying at the end of 2006. I was milking 400 cows. I was running a fairly large operation. Now I am running an intensive beef operation on that same land so the land is run in a similar manner. It is just that I do not have to get up at 4 o'clock in the morning.

The Hon. RICK COLLESS: In relation to water of an irrigable quality, if I can use that expression, certainly there is an opportunity for more irrigation water to go into the system if it is extracted and is of good quality?

Mr CLIFT: Yes.

The Hon. RICK COLLESS: What about if it can be cleaned up through reverse osmosis as many of the companies are talking about doing with their more saline waters? Is that an opportunity to put that water back into the commercial system as well?

Mr MAGNER: Any water that is suitable back into irrigation water. Mind you, we are in a very high rainfall area. We hopefully do not need irrigation. We do irrigate and we have got our irrigation licences and all that. Its potential use, even in a wet year there are periods of time when water can be used on properties. I believe that if water can be used it should be used.

Mr CLIFT: We are in a pretty high population growth area. There are issues with dams for water supply and that sort of thing. I potentially probably see more application for urban water use if there are going to be issues with building dams on environmentally sensitive land, and that type of thing. That would be an ongoing use all year round, regardless of whether it rains. The only issue we have with that is most of us in that area are surface water users. There are stock and domestic bores into the aquifer. For us, the issue relates—and the question has been asked here a few times—to contamination of aquifer. The big problem in our area will be contamination of surface water by things like evaporation points. I have heard evaporation points are no more, but you can call them settling points or whatever you like, at the end of the day you are going to have a brine in there.

We are subject to some pretty severe rainfall events, a lot of flooding and that type of thing. If you look at what has happened in Queensland in the past 12 months you have seen plenty of drag lines go underwater with big open-cut coalmines. Then you have the issue of pumping those out. Where do you pump the water to? At the moment you have got Gladstone, which I think has a no-take on fish for 500 kilometres. They are not sure what has caused that. The agricultural impacts have not changed but there has been a hell of a lot of brining impacts going on there. You can put all the innuendos you like there—

CHAIR: A lot of dredging as well?

Mr CLIFT: A lot of dredging and that sort of stuff going on. Our real concern is that it is not a question so much of the fracking of the underground aquifers but what is going to happen to that brine, particularly if you get overtopping? I was originally raised in the Condamine area of Queensland and I am fully aware of all the gas implications out there. I have seen the evaporation ponds out there. It scares me as to what they are going to do with that brine as the evaporation process continues over the next 20 years and how they are going to rehabilitate those areas. That is the real issue for me.

Mr MAGNER: Can I make one more comment?

CHAIR: Certainly.

Mr MAGNER: With regard to this water that is coming up, it has been spoken of reinjecting it back into the underground somewhere. One of the concerns we have is that area are up there is going to be a high population area. Whether you like it or not Australia is going to have to take more people eventually and the north coast of New South Wales is going to be one of the big growth areas. For that to happen we are going to need urban water supplies. The word is that Dunoon Dam is not going to get off the ground. It has been very difficult to get dams and for the last 20-odd years "dams" has been a dirty word.

The Hon. JEREMY BUCKINGHAM: The Greens have a pro-dams policy. I changed it. Have a look at our policy.

CHAIR: The witness is trying to answer the question.

Mr MAGNER: One of the potentials up there is the deep aquifer water of the Clarence-Morton Basin. Nobody is accessing that water for anything at the moment. It is sitting there above the coal seams. We do not want anything injected into that either from the top or busted up from the bottom. That particular huge body of water has the potential to service a very large population. We believe we must protect that one at all cost.

The Hon. RICK COLLESS: Returning to your discussion about compensation, what would be your preferred model for what form that should take? Should it be production based on per litre of gas or should it be on per well head on a property? Also, should there be some sort of template agreement that you should be able to sign when the gas company first comes to your property?

Mr CLIFT: We all hold water licences up there for irrigation. We have an access licence, which is the pump site. We pay a fee for that pump site and then we pay usage fee on top of that. If you are going to bring this water extraction under a water-sharing plan it is fairly straight ahead because then it needs to have those built into it. If you put a bore down, you are charged a site fee and then whatever you extract out of it you are charged per whatever comes out. I think that is fairly straight ahead from that point.

CHAIR: We are running over time so we will leave it there. Thank you very much for coming all the way down here. It is great to receive evidence from farmers who actually do farm. I do not think they were any questions on notice but if there are the secretariat will send them to you. Will you please get your responses back to the Committee to any questions on notice by the end of January.

(The witnesses withdrew)

(Short adjournment)

ROBBERT DE WEIJER, Chief Executive Officer, Dart Energy Limited;

JASON MUNRO NEEDHAM, Exploration Operations Manager, Dart Energy Limited; and

ANDREW ROBERT COLLINS, External Relations Manager, Dart Energy Limited, affirmed and examined:

CHAIR: Before proceeding to questions from the Committee, would any or all of you like to make an opening statement—a brief opening statement preferably. If it is lengthy we will ask that you table the statement.

Mr DE WEIJER: I would much appreciate making an opening statement, which is about three minutes, if you would allow me?

CHAIR: Thank you.

Mr DE WEIJER: Firstly, thank you for providing Dart Energy with the opportunity to present at the inquiry today. Allow me to quickly introduce the three of us. My name is Robbert de Weijer and I am the chief executive officer for Dart Energy in Australia. Before joining Dart earlier this year, I worked for Shell International for 22 years, living and working in many different countries. With me is Mr Jason Needham, our exploration operations manager for New South Wales. Jason is a subsurface expert who knows New South Wales extremely well. To my left is Andrew Collins, who is our external relations manager.

Dart Energy is an ASX-listed company spun off from Arrow Energy last year. Thirteen of the company's top 20 shareholders are Australian; the other seven are from North America and Europe. We operate in eight different countries and have more than 150 staff. In Australia currently all of our assets are in New South Wales. We are in the exploration phase of our development and have only drilled exploration wells so far. We have no production wells. We do expect to commence work on a coal seam gas production pilot at Fullerton Cove near Newcastle early in 2012, once formal approvals have been received. We are strongly focused on the domestic market here in New South Wales and we are an active member of the Australian Petroleum Production and Exploration Association [APPEA].

We are going through a very interesting period with coal seam gas in Australia. On the one hand, there is a significant and emerging gas supply gap in New South Wales and a vital need for more gas. Gas is less than 10 per cent of New South Wales energy mix today and, of that, more than 90 per cent is imported from other states. In addition, gas demand in New South Wales is expected to more than triple over the next 20 years. On the other hand, we have a cleaner fossil fuel right here on our doorstep, which can provide cleaner energy with minimal environmental impact and allow other land uses to continue. On top of that, it will provide new jobs, revenue for the State, additional income for landholders and reliable power that can keep electricity prices down.

Coal seam gas developments can be very large, as we see in Queensland, but they can also be very small. A small footprint development of, say, five to ten wells can provide gas to a tri-generation power plant, which can provide cleaner power to, for example, shopping malls, offices, industrial areas or new housing suburbs. At Dart Energy we have a strategic alliance with a company called Clarke Energy to realise exactly that. It is one of the important differences that we can provide here in New South Wales. I believe it is the flexibility of coal seam gas to be either large or small, and local, as an energy provider, that can make it so valuable in a carbon-constrained future.

We have a clear example this week of the opportunities that coal seam gas can bring to the State. We just announced our first gas sales agreement in Australia at Fullerton Cove with a company called Maria's Farm Veggies. This company is a state-of-the-art glasshouse project and will produce commercial quantities of high-quality fresh vegetable produce. Dart will also have an equity investment in this project. We plan to supply gas to a future 8-megawatt combined heat and power plant that will deliver electricity and hot water to the glasshouse project and excess power will go to the grid. Virtually all CO2 produced from the power plant will be distributed to the plants for significantly improved crop yields and plant robustness. The glasshouse project is expected to create an initial 125 local jobs in the Newcastle area. This project shows that coal seam gas development can co-exist with alternative productive land uses, including agriculture, in an environmentally sustainable way.

Having said that, we know that there are community concerns. When I talk to people, I hear concerns about the number of wells per square kilometre, alleged interference with aquifers, the value of land and properties, and more. It is important that these questions are asked, but I would also like to make the point that some of the responses pushed by certain groups are somewhat misleading, not telling the full story or sometimes even plain wrong. The statement that we supposedly use diesel-based drilling fluids is a good example. All coal seam gas wells are drilled with water-based fluids, and that has been in place for many years. We believe that the perceived risks and issues can be managed and controlled. However, I also realise that the industry needs to explain more to build trust and earn its social licence to operate and, as a company, we are very much committed to achieving exactly that, and I am pleased that our relationship with our landholders is excellent.

I also hear a lot of the "not in my backyard" syndrome. It is understandable that communities would rather not live near a gas well or a pipeline. The well is not that different from an electrical transformer box or a substation, and a buried pipeline is not that different from a glass fibre cable. It is all part of the vital infrastructure that is required for us to live our daily lives. In other countries there are wells in a number of areas, including semi-urban areas such as in the United States, Beverly Hills, and also in countries like Holland. I believe that we need to be open to the concept of multiple land uses without compromising the environment or quality of life of future generations. We need to ensure sustainability of our aquifers for centuries to come. We need to show leadership and commitment, how we can make this work together. If communities and industry work together on where the wells can best be drilled, that would be a really good outcome.

In summary, we are very much committed to providing energy to the domestic market in New South Wales in a way that is fully sustainable. We very much welcome this inquiry and expect the inquiry will result in a sustainable industry here in New South Wales. We believe that the responsible development of local coal seam gas resources will lessen the impact of a real energy shortfall in the State, deliver positive economic benefits and jobs to the people of New South Wales, and with minimal environmental impact. Last but not least, it will help greatly to keep electricity prices under control as well. Thank you for allowing me the time to read my statement.

The Hon. Dr PETER PHELPS: Mr Needham, you are an expert in below-ground operations?

Mr NEEDHAM: I am a geologist, yes.

The Hon. Dr PETER PHELPS: Are you aware of any instance in Australia where coal seam gas drilling has resulted in a cross-contamination of water from the coal seam to a groundwater aquifer used for agricultural irrigation?

Mr NEEDHAM: Not to my knowledge. I do not have knowledge of every well in Australia, but it certainly has not been brought to my attention.

The Hon. SCOT MacDONALD: Is Dart responsible for the St Peters proposal?

Mr DE WEIJER: The St Peters area is within our licence area PL 463, that is correct.

The Hon. SCOT MacDONALD: There was an appearance earlier where Dart was portrayed as being impenetrable, not responsive, difficult to get information out of and not giving much by way of time at a public meeting—basically evil, I suppose, in summary. How would you respond to that?

Mr DE WEIJER: What I would like to say is that, first of all, we are very committed to being transparent. Are we perfect? Probably not, so we are always open to learning. We have also received information where people have been very appreciative of the information that we have provided, the plans that we have shared beforehand, and I think that is one of the reasons why we have been able to build such good relationships with the landholders that we have, being very upfront and very reasonable about the compensation agreements that we have executed with them, and co-creating where the wells are going to be, what they are going to look like, et cetera. We are certainly committed to providing as much information as we can. There are always pieces of information that may be commercially sensitive, so obviously we are a bit more hesitant to share that, but apart from that and maybe information that involves personnel data, which we are not willing to release either, we want to be very open about what we share.

CHAIR: I remind members that it is not helpful when quoting prior witnesses to use terms that those witnesses did not use.

The Hon. SCOT MacDONALD: Just the last little adjective was the only one missing. I think I asked a similar question to this of the departmental people a week or two ago: If we do not get indigenous gas in New South Wales, what would be your expectations in relation to electricity prices, which you just mentioned, and energy security and pricing? Where do you think we will be in a decade if we are not allowed to build any more coal-fired power stations?

Mr DE WEIJER: It is hard to predict what the gas price is going to be, but when you look at the dynamics of energy in New South Wales, as I said earlier, gas is less than 10 per cent of the energy mix today and more than 90 per cent of that gas comes from different states. The only gas produced here is the natural coal seam gas from the Camden area—it is predominantly coming from there. Also, gas demand is going to triple over the next 20 years, so when you look at demand versus supply forecast over the next 20 years you see a gap emerging of roughly 400 PJ per annum. That is a huge amount of gas. Our point is, looking at it from a New South Wales perspective, we have the gas in the ground that we believe can be produced safely in an environmental manner that minimises impact and, very importantly, where other land uses can continue as per normal. The footprint really is very low.

The Hon. SCOT MacDONALD: If there were a moratorium, which some geniuses in the Federal Parliament are proposing, where would our energy be in five to 10 years' time?

Mr DE WEIJER: There would be a shortage of gas. Some of the gas-fired power plants that have been permitted but are not getting off the ground—that saga will continue.

The Hon. SCOT MacDONALD: And investment will fall?

Mr DE WEIJER: Yes, absolutely. Investment will fall and prices will increase. We would have to continue with coal-fired power generation, which is not helping the environment.

The Hon. RICK COLLESS: Mr Needham, as a geologist working in the gas industry, are you regularly in contact with other geologists and hydrogeologists working in that field? Is there a high degree of sharing of information amongst that relatively small industry group?

Mr NEEDHAM: Yes, we have regular technical conferences and we all attend. Those are the forums at which professionals can share their ideas. Because some data is confidential and sensitive it cannot always be shared. However, there is a great deal sharing of geoscience information within the industry. The industry has a very professional base in terms of geoscience and engineering. Many organisations facilitate forums between geologists and engineers to keep the scientific and technical progress of the industry running along.

The Hon. RICK COLLESS: Does the information sharing happen between people in the industry and Government geologists and hydrogeologists? Do they attend these conferences?

Mr NEEDHAM: Yes. I have never been to a conference without government geologist being there.

The Hon. RICK COLLESS: When you try to work out the knowledge the industry has of what is happening 1,000 metres below the ground, is it fair to say that generally there is a pretty good understanding of the processes and the things that happen down there?

Mr NEEDHAM: Yes. I would say there is a very good understanding—as good as you can get from a human brain that is subject to data input. There is good science behind it; the science is well established. There are different disciplines in geology just as there are in medicine and people specialise in different aspects. The industry promotes the highest knowledge it can. There is definitely a really good understanding of the subsurface.

The Hon. Dr PETER PHELPS: Mr de Weijer, what starts the produced water strategy?

Mr DE WEIJER: There are a couple of important points to make. First, water production in New South Wales is significantly lower compared to, for example, in Surat in Queensland. I am talking about 50 to 100 times less water production per produced entity of gas. That is a very significant difference. The other

significant difference is the fact we are looking at relatively small coal seam gas developments. For example, with the development that we announced yesterday, we are talking about initially five to 10 wells. As a consequence, water production is quite minimal. We treat the water through a reverse osmosis process and it can be put to beneficial use. For example, with the glasshouse project that water will be used for irrigation purposes.

The Hon. Dr PETER PHELPS: So, across the State for all your potential production licences reverse osmosis would be the preferred option? Is it the only option?

Mr DE WEIJER: For us it is the most obvious option because it allows us to make beneficial use of the water as an end result. You can get water up to potable standards.

The Hon. Dr PETER PHELPS: What is the strategy for the residual super-concentrated saline?

Mr DE WEIJER: Again, the quantities are much lower than is typically seen in Queensland. The default strategy would be to transport that salt to an approved waste site.

The Hon. Dr PETER PHELPS: In other words, to bury it.

Mr DE WEIJER: At an approved site. There may also be opportunities to commercialise the salt. However, given the very small quantities we are expecting in New South Wales, that is probably not commercially viable. It could be different in Queensland.

CHAIR: Would you consider deep well reinjection of that hyper-saline water?

Mr DE WEIJER: It is important to realise that we are in the exploration phase. It will depend a little on what a development will look like and where it will be. With Maria's Farm Veggies the obvious strategy will be to treat the water because it can be used beneficially in the glasshouses. With another development somewhere else one of the options might be to reinject the water into an appropriate reservoir. It is horses for courses.

CHAIR: You mentioned there being five wells at the Fullerton Cove site. Are they dispersed or on one head? How deep is the seam from which you are trying extract? Do you use horizontal drilling and how far would you be drilling from the wellhead?

Mr DE WEIJER: Initially we will do a production test, which we will hopefully start early next year once we have received the approvals. We will drill two horizontal wells accessing two separate seams.

CHAIR: At what levels?

Mr DE WEIJER: At roughly 600 metres and 650 metres below the surface. Each of those horizontal legs will be roughly 1,000 metres long.

CHAIR: And that is sufficient to get an idea of flows?

Mr DE WEIJER: Exactly. By the second half of next year we should get a good indication of flow rates and be able to determine whether we can flow the wells at commercial rates. That is what a production test is all about.

The Hon. JEREMY BUCKINGHAM: Mr de Weijer, you said that you would have five to 10 production wells at Fullerton Cove to service Maria’s Farm Veggies.

Mr DE WEIJER: Yes.

The Hon. JEREMY BUCKINGHAM: Will those wells be sufficient to run that operation?

Mr DE WEIJER: As I said, we are looking at an eight megawatt power plant. Obviously it will depend on the results of the production tests. That will ultimately determine the number of wells we will need. Our current assumption is that we will need five to 10 wells to provide enough gas for that eight megawatt combined heat and power plant.

The Hon. JEREMY BUCKINGHAM: You said that it was a small development and that initially there would be five to 10 wells. Where will the gas go from the subsequent wells?

Mr DE WEIJER: It depends on whether there are subsequent wells. There is potential for expansion of the glasshouse project, which will mean more wells will be required. However, we are still talking about tens rather than hundreds.

The Hon. JEREMY BUCKINGHAM: Are you aware that a very similar glasshouse project was proposed in the Shoalhaven in 2008? The Disselkoen Foundation proposed a $126 million glasshouse project called, I think, Maria's Farm Veggies. It was proposed that $126 million would be invested and that it would employ 280 people, but it never got off the ground.

Mr DE WEIJER: I am not aware of that.

The Hon. JEREMY BUCKINGHAM: I am also interested that you said that Arrow Energy was an equity investor.

Mr DE WEIJER: No, Dart Energy.

The Hon. Dr PETER PHELPS: Darts, arrows—

The Hon. JEREMY BUCKINGHAM: Yes, dart, arrow, bow, shell—I get them mixed up.

Mr DE WEIJER: We are separately listed.

The Hon. JEREMY BUCKINGHAM: I know it has nothing to do with Shell. Dart Energy, as opposed to Arrow Energy, is an equity investor in Maria's Farm Veggies. Can you expand on that? Are you underwriting this project entirely? Is this a public relations exercise?

Mr DE WEIJER: We are investing $5.2 million in this project for a 20 per cent equity. What is important for us and the State is that we can prove the concept that coal seam gas, agriculture and food production can go together and that coal seam gas or natural gas can actually enhance food production. We are all concerned about food production in this State. This is a great story of us providing gas to a project that will produce 60 million cucumbers, 35 million tomatoes and four million kilograms of capsicums each year with near zero emissions. Excess power will be exported to the grid, so it is a win-win for everybody.

The Hon. JEREMY BUCKINGHAM: You said you wanted to be very open. Where else in the area covered by PEL 463—that is, Sydney—do you plan to explore over the next two to three years? What suburbs?

Mr DE WEIJER: PEL 463 covers 2,400 kilometres; it is very large. There is 13 trillion cubic feet of gas in place, which is a lot of gas. One trillion cubic feet of gas is enough energy for one million people for 20 years. In conjunction with PEL 463 we will do a land use study and have a good look at the entire area to determine where it would make sense to have a small coal seam gas development. That could be a large industrial area, a large commercial area or a large easement. That is very much the first step. At the moment, we have absolutely no specific plans to drill in any suburbs. We are keen to do the land use study first, to discuss that with development departments and to be transparent about the results. We will move on from there.

The Hon. JEREMY BUCKINGHAM: PEL 463 expired on 22 October. This week Premier Barry O'Farrell was on the Alan Jones show and he said:

> I cannot understand the system that was in place under the previous Government that allowed coal seam gas exploration licenses to be granted in these built-up areas.

Do you share the Premier's concerns about this exploration licence? Will you relinquish the licence if the Premier asks you to do so?

Mr DE WEIJER: It is really important to understand and for us to share that coal seam gas development can be very flexible. Obviously, a licence area like PEL 463 requires a different approach than that taken for an area that is barely populated. We firmly believe that small coal seam gas developments are possible in large industrial areas, on large easements and so on. There is a real opportunity to start providing gas to trigeneration units. Given the amount of gas that is available near the market and given the need for gas over the

coming years, I believe there are some very good opportunities for the State to look at coal seam gas developments under this PEL.

The Hon. JEREMY BUCKINGHAM: I understand that, but my question was about the risk to your business if the Premier is voicing concerns about your exploration licence, which has now expired. Do you see it as a significant risk to the potential development of this industry?

Mr DE WEIJER: We have been very much in contact with the relevant departments, with Mr Brad Mullard's department. We have been very much in contact with the senior advisers of both the Premier's office and Minister Hartcher's office.

The Hon. JEREMY BUCKINGHAM: When was the last time you were in contact with them?

Mr DE WEIJER: The most recent time is probably a few days ago when we shared the Maria's Farm Veggies story.

The Hon. JEREMY BUCKINGHAM: Was that with the Premier?

Mr COLLINS: No, with Mr Hartcher's office.

The Hon. JEREMY BUCKINGHAM: There has been a lot of concern around the State about the community consultation process, or lack thereof. Pretty much wherever you have been the communities have had significant concern, such as in St Peters and Putty. More recently representations have been made to me by residents of Fullerton Cove about how you have been dealing with that community. Do you think it is acceptable that the people of Fullerton Cove were not informed at all about the pilot production there? The only way that those people found out about those two pilot production wells was someone happened across an Environment Protection and Biodiversity Conservation [EPBC] controlled application? Do you think that is acceptable in terms of notification and community engagement?

Mr DE WEIJER: If you allow me to explain what we have actually done in terms of community consultation there. The first thing we did was a letter dropping to about 100 homes in the direct vicinity of that Fullerton Cove area. We offered one-on-one discussions with every single person who lives in any of those hundred homes.

The Hon. JEREMY BUCKINGHAM: Sorry to interrupt, but was that before or after the EPBC referral?

Mr DE WEIJER: This was way before that. This is many months ago.

Mr NEEDHAM: Six months prior to it, at least.

Mr DE WEIJER: That was followed up by a community consultation session that we had at Williamtown town hall, which was also prior to the EPBC. We have had many discussions with people after that on a one-on-one basis. People had expressed concern, we went to their house and talked to them. On this coming Monday we have got the next community consultation session in the Newcastle area. We pride ourselves on the amount of community consultation that we have done. We are getting very much positive feedback about that too from a number of people. It does not mean that everybody agrees with what we are doing, but we are certainly being very open and approachable to people to have discussions and very much on a one-on-one basis.

The Hon. PETER PRIMROSE: Could you please talk about what steps you are looking at to reduce fugitive emissions at wells in the future?

Mr NEEDHAM: Any commercial company is obviously interested in reducing fugitive emissions. They are obviously gas molecules that the government recognises royalty on and also the company can supply at a commercial rate, so that is an obvious driver for reducing fugitive emissions. Coal seam gas wells are designed and established essentially to flow water prior to gas. When you actually do achieve gas desorption from the coal, that is the time when you are actually producing gas, your well is already plumbed up to a distribution network at that stage. Unless you have got engineering flaws, if you have done a poorly designed engineering

job, then your fugitive emissions are really infinitesimal compared to the production that you are achieving. If the system is already plumbed up then the chances for fugitive emissions are very low.

The Hon. PETER PRIMROSE: You would regard fugitive emissions as not being of particular concern to Dart?

Mr NEEDHAM: It is something certainly that we need to keep a handle on. Fugitive emissions of any type are something that every company needs to be responsible for. It is not something we see is going to be a huge concern, just by the nature of the engineering, but it is something we will certainly keep track of as much as we can.

The Hon. PETER PRIMROSE: I just recognise that in the recent Senate report it was regarded as a significant issue. I thought maybe you had some steps you may be looking at to attend to it. My second question is where would you point to as a world's best practice for dealing with fugitive emissions?

Mr NEEDHAM: It is a little bit outside my specific area of expertise, to be honest.

Mr DE WEIJER: When you look at fugitive emissions, as Mr Needham is saying, there are a number of reasons why you want to absolutely minimise fugitive emissions to zero.

The Hon. Dr PETER PHELPS: Money being one of them.

Mr DE WEIJER: Exactly.

The Hon. PETER PRIMROSE: Money, the environment. Accordingly, I would imagine it would be in everyone's interest for there to be world's best practice.

Mr DE WEIJER: Absolutely, 100 per cent.

The Hon. PETER PRIMROSE: That is why, without being facetious, I am just trying to get an idea of where you would regard as having world's best practice.

Mr DE WEIJER: I think the world's best practice, we have got the skills to make sure that we absolutely minimise fugitive emissions. We have got some of the best drilling engineers in the business. Also from a surface facilities perspective, we have got some of the top people there. It is all about how you design, construct and operate your wells and your facilities. Basically you want to avoid any pipe work from leaking in whatever way you can.

The Hon. PETER PRIMROSE: But you would say at the moment that it is not a particular concern in terms of your practice?

Mr DE WEIJER: No, it is something that we are very focused on. We absolutely want to minimise fugitive emissions to zero. We are spending a lot of time on making sure that that is what happens.

The Hon. PETER PRIMROSE: Does anything particular come to mind?

Mr DE WEIJER: It is all about how you design and construct the wells and the facilities and make sure that you have got some safeguarding around it as well, like leak detection, automatic shutdown systems, et cetera.

The Hon. PETER PRIMROSE: This is something we have asked other people: How many access agreements for coal seam gas exploration have you entered into so far?

Mr DE WEIJER: For the Federal inquiry we were asked the same question and we were asked to share that. The number is around 13, is it not, Mr Collins?

Mr COLLINS: It is 14, to my recollection.

The Hon. PETER PRIMROSE: Do you have a template contract that you provide to landholders?

Mr NEEDHAM: I can probably answer that best. Being an exploration geologist, it is part of my job to go out and talk to landholders and get them comfortable with what we are doing so they have understanding. Understanding breeds comfort, I guess. We have a standard access agreement which we supply to landholders but we always recommend to landholders to get third party legal advice. There are some solicitors I have worked with in regional areas representing landholders that are very good at those, so I refer people as much as I can to those guys.

The Hon. PETER PRIMROSE: Could you possibly provide us with a copy of that standard contract?

Mr DE WEIJER: Yes.

The Hon. PETER PRIMROSE: Do you require there to be a confidentiality clause?

Mr NEEDHAM: There is a confidentiality clause in it. It is certainly not required from our perspective; it is mainly to protect the landholder's privacy.

The Hon. PETER PRIMROSE: If a landholder believed that they wished to waive that particular clause you would do so?

Mr DE WEIJER: Absolutely. No problem.

The Hon. Dr PETER PHELPS: Have you been faced with a situation where a person has baulked at entering into an access agreement?

Mr NEEDHAM: Yes. Not everyone wants to sign an access agreement.

The Hon. Dr PETER PHELPS: What was your response? Have you gone to arbitration or to the Land and Environment Court?

Mr NEEDHAM: No, never.

Mr DE WEIJER: We respect the landholder's position. We will try to find another landholder, effectively. In fact we have gone to the extent where one of our landholders had an executed land access agreement, he got cold feet, he wanted to get out of it and we let him. We think it is really important to have strong relationships with our landholders and to have a reputation where we are seen as very much working together with the landholders. That has a number of advantages. One of the last wells that we drilled, the landholder was very pleased. Within two or three weeks of our drilling program there were four or five of his friends who were actually saying, "Could Dart drill a well on my land as well?"

The Hon. PETER PRIMROSE: Maybe it is not such the evil empire that Mr MacDonald had previously perceived.

The Hon. GREG DONNELLY: The legislative framework that operates in New South Wales for the industry has not been purpose drafted. The original legislation goes right back to mining and onshore gas petroleum has been built on top of that. We are dealing with an emerging industry that is not operating under a legislative framework which was specifically put together with the industry in mind. If that is the case and you understand it to be the case, do you believe it would be worthwhile putting together a piece of legislation specifically for your emerging industry, or do you believe that the existing framework is essentially satisfactory for the purposes of your business?

Mr DE WEIJER: We believe that the industry is strongly regulated to date but we are all for streamlining the regulation and the legislation. As an industry we are happy to work with the government to do exactly that. But we believe that today the industry is already very strongly regulated.

The Hon. GREG DONNELLY: When you say you are at least conceptually supportive of streamlining, what particular aspects do you believe it would be desirable to streamline or make more efficient?

Mr NEEDHAM: I think the Government is making some steps towards that at the moment by the aquifer interference policy. I think there are a lot of grey areas in how the different Acts and the different water Acts relate to each other. The water Acts in particular, there is a whole bunch of them and they do not interact

well with each other. The Petroleum Act itself was built for onshore conventional petroleum but it pretty well covers everything that a coal seam gas regulation or Act would need to as well. There are obviously regulations that you can put on the Act and those regulations are probably more the place for industry-specific type regulations.

The Hon. GREG DONNELLY: Point taken, but while we are on that point: What aspects do you believe it would be desirable to have some clarification or further regulation around specifically for the coal seam gas industry?

Mr NEEDHAM: I think it is difficult to legislate scientific and engineering best practice. That is something that evolves over time. Engineering practice is something that the industry handles with a lot of pride. It is something that we do very well, so I do not think that is necessarily an instance where you would want to beef up the regulations. I think it is more how it interacts with water and aquifers that is the main driver as I see it.

Mr DE WEIJER: Maybe also I think everybody will be helped by more transparency. So maybe things around reporting, groundwater monitoring, water quality monitoring, et cetera. That may help all parties involved at the end of the day.

The Hon. GREG DONNELLY: Just stepping back from looking at it from a company perspective to looking at it more broadly from an industry perspective and the issue of the specific terms that are entered into with the property owners with respect to the remuneration they receive. Do you believe there is merit in having a standardised way that issue is dealt with whereby it would apply across the State, perhaps built in with some variables to enable it to be above a minimum base? Or do you believe it is better that companies essentially be permitted to operate in the market and negotiate with property owners as they see fit?

Mr DE WEIJER: I think what you are trying to achieve is a level playing field so the short answer to your question would be, yes, I would probably support that. I think it is important to allow flexibility as well because every landowner is unique and his or her property is unique as well. Sometimes we get a landowner and he says, "Okay, I really want this road to be fixed", and we make that part of the compensation that we give him, or he wants a fence put up somewhere and he wants the well in a particular area. As long as that flexibility is there I think a standardised approach across the industry in the State—in fact in Australia—would probably be beneficial.

CHAIR: I will bring this session to a close. I would like to thank you Mr De Weijer for bringing your team along. Your evidence has been forthright and freely given. We thank you for that. Concerning the question on notice and provision of documents; the company has 21 days to provide that to the secretariat.

Mr DE WEIJER: We will do that tomorrow.

CHAIR: We appreciate your being here.

Mr DE WEIJER: We appreciate the opportunity.

(The witnesses withdrew)

MARYLOU POTTS, Marylou Potts Pty Ltd, affirmed and examined:

CHAIR: Before we commence, would you like to make a brief opening statement.

Ms POTTS: A very brief one. The purpose of my submission is twofold: It is simply to write water into the Petroleum (Onshore) Act and create a better balance for the landholders in the Petroleum (Onshore) Act.

CHAIR: Do you want to run us through your presentation?

Ms POTTS: I am happy to do that.

CHAIR: Prior to questioning it is best if you proceed.

Ms POTTS: The purpose of the presentation was to summarise.

CHAIR: Please remember that Hansard cannot record pictures. If there is anything that needs to be described could you describe what is on the screen for the purpose of Hansard.

Ms POTTS: The purpose of the presentation was simply to summarise the amendments which I had suggested to the Petroleum (Onshore) Act. The summaries are in the form of what is called a mind map. You will see them as we go through. I believe that a mind map provides a graphical representation of how the Act is set out and how the amendment would then work which hopefully will assist you, because 44 pages of amendment of the Petroleum (Onshore) Act is heavy duty and I understand that we are at the end of the day.

CHAIR: You have 45 minutes.

Ms POTTS: This is the summary of the submission: To ensure the protection and conservation of water in petroleum exploration and production activities. At the moment the Petroleum (Onshore) Act has only two references to water. One is where the miner must provide samples to the Government and the second is a reference to making regulations with respect to water but there have been no regulations made with respect to water. When we talk about environmental protection which the Minister must take into account when considering whether to grant or renew exploration licences or production leases there is no discussion or consideration of water under the Act. The Minister is not required to consider water. We know the Government has issued reports—which I have here if necessary—where it acknowledges that the coal seam gas activities are potentially damaging to the overlying aquifers. The companies have made those acknowledgements in their environmental assessments. The purpose of these amendments is simply to write protection and conservation of freshwater aquifers into the Act.

CHAIR: Are those reports available to be tabled at the hearing today?

Ms POTTS: Yes, I can table them. With respect to establishing a better balance of rights and powers between the landholder and the miner, the landholder's only rights and powers in this Act are with respect to the access arrangements. My understanding of how industry is operating at the moment is that they provide their draft of the access arrangement to the landholders and it is that draft which is then amended or entered into. The drafts that I have seen which are provided by the miners certainly do not preserve and protect the rights of the landholder under the legislation as it exists. Those rights are written-off in the drafts which I have seen. Unless the landholder is aware of the write-off of those rights, that write-off is irrevocable under the legislation. We have heard Dart say that it would happily terminate an access arrangement if a landholder wanted to back out. Whether or not that happens all the time I do not know. I do know that there are anecdotal references that landholders, once having entered into an access arrangement, feel trapped by it and feel that they were only given a small part of the story when it began.

CHAIR: Given that most of the evidence we have received says that those landholders are then asked or referred to their own legal representatives do you feel that most of the legal representatives available to regional people would be aware of the sorts of things that you are talking about, the fact that certain basic rights under certain laws have been alienated from the agreements?

Ms POTTS: When I first read the Minerals Council template, which is for mining—I have not seen the Minerals Council template for petroleum—the Minerals Council template for mining does not refer to the restricted areas at all. If you are not aware that those restricted areas cannot be protected—for example 200 metres from a dwelling house, 50 metres from a garden, orchard, vineyard, or any improvement—in exploration as well as production and you read that template you could quite happily inadvertently sign it. I will not speak for the lawyers who have negotiated access arrangements on behalf of landholders; I cannot.

CHAIR: Please proceed.

Ms POTTS: The Petroleum (Onshore) Act has 14 parts. It is a relatively simple and small Act. It is very readable. It is not like the Mining Act which is six times the size and it is not as sophisticated as the Mining Act. If you wanted to read the Queensland legislation you are looking at over 1,000 pages in two Acts, so you are looking at 2,000 pages of legislation. It is seriously complex legislation, the Queensland legislation. In a sense we are lucky because we are starting from a position where we can take the benefits of Queensland's experience and build them into this Act.

This is a typical mind map. This presentation will not deal with all of the parts of the Act, only those parts I have referred to. This is a mind map of the process through which the Act directs you in order to gain your tenement: Enter into the access arrangements; discover petroleum; required to give notice to the Minister; the Minister requests an application for a production lease; production lease is then granted; notice of that application is then published—the publication is generally done in the *Land*. It is a two centimetre by two centimetre publication and if you are not reading the *Land* on that particular day a landholder will miss it. Royalties and protection of the environment including rehabilitation are in part 6. That is a layout of the processes. In my submission I talk about how to build the protection of water into the Act and obviously the definitions are fundamental to that process. Most of these definitions relate to the protection of water.

Part 3 concerns petroleum titles and this is where I have tried to build in greater transparency and accountability. Transparency for the landholders that applications are being requested; transparency in the fact that if, for example, vulnerable aquifers, urban areas, water catchment areas are endangered then there will not be a grant of a tenement over those particular vulnerable areas. What else can we say about this? I can go through each one. Part 3 concerns the tenements and the purpose being there to increase the transparency. Part 4A concerns the access arrangement, if there is going to be one, and I understand there is a template being negotiated between the department, the New South Wales Farmers and the New South Wales Minerals Council.

CHAIR: Yes.

Ms POTTS: Once that has been negotiated I do hope that it is a balanced agreement or arrangement and that, if anything, it is more in favour of the landholder than the miner—primarily because the landholders do not have the expertise, the skill, the time, or the money to devote to the negotiation of these types of documents.

CHAIR: Have New South Wales Farmers approached you for your advice or this sort of information?

Ms POTTS: They have. I drafted an access arrangement for a group in the Southern Highlands which was drafted from the perspective of the landholder; it was for the community group. In that process I had a number of light bulb moments and discussed that draft with the New South Wales Farmers Association. The New South Wales Farmers Association wished to use that draft and so I produced for them a template of that arrangement. However, when the template was given to the department and the New South Wales Minerals Council the Minerals Council wanted the copyright to be removed and that was the end of the story. I need that document to be able to provide my services.

CHAIR: Was that your copyright or the farmer's?

Ms POTTS: Mine.

The Hon. SCOT MacDONALD: It states: Just and equitable compensation for all losses of the landholder including loss of total land value. Surely that is going to be problematic? I rang the Gloucester real estate agent today and he said there had been no appreciable loss of land value. How do we measure that? How do we not build ourselves into a situation where we are going to be in the courts forever on a fairly subjective issue?

Ms POTTS: It is a really important issue and one which I understand a lot of landholders are terrified about. They believe their livelihood is being devalued on a massive scale. There are landholders in the southern highlands who believe their property has been devalued by more than $1 million. We heard Tim Duddy on the radio the other day with Alan Jones when he said that his $1.5 million property did not get a bid for $800,000. Going back to your question, when I wrote this submission I believed the way you could go about that was to have a valuation before the access arrangement was entered into. If subsequently the landholder sold the property that valuation could be used and if there was a diminution of value of the land that would be compensated by the miner.

The Hon. Dr PETER PHELPS: How could you guarantee that? There might be a diminution of value due to exceptional circumstances—five years of drought or something along those lines.

Ms POTTS: These are the issues with valuation. The Western Australian legislation takes a different tack. The Western Australian mining legislation—I am not talking about the petroleum legislation—allows for there to be no grant of title if the landholder does not give consent.

CHAIR: That is an absolute veto.

Ms POTTS: Yes, an absolute veto. That absolute veto means that when the landholder negotiates with the miner they are truly talking about the value of the land, which means that the value of the land is maintained. I am not a valuer but when you have a situation where you are simply giving a bunch of money to a landholder because his land has devalued, the land value remains devalued. The landholder will then walk away with his bunch of money and the new landholder will come in. If he is seeking a bunch of money for devalued land the land is already at its devalued state. Do we not have a serious issue here with capital asset value?

CHAIR: Except one would assume the new owner was buying at the devalued price.

Ms POTTS: That is right but the situation is that all of these landholders have land values that are devaluing.

CHAIR: What is your view of the Western Australian Mining Act? Do you think that is directly transferable to New South Wales as far as the Petroleum (Onshore) Act is concerned?

Ms POTTS: That goes beyond my expertise. I do think that in so far as a legislative regime which maintains land value is concerned land values will be maintained if the landholder has that veto right.

CHAIR: Is that an assumption?

Ms POTTS: That is my belief.

The Hon. Dr PETER PHELPS: You are talking about a veto over exploration.

Ms POTTS: Yes, and production.

The Hon. Dr PETER PHELPS: They already have a veto over production.

The Hon. JEREMY BUCKINGHAM: Where there is cultivation.

Ms POTTS: The Minister has a discretion in that instance as well for the cultivation issue. The way I believe an access arrangement should be structured is quite different from the access arrangements I have seen, which are straight line agreements. The NSW Minerals Council template provides on the front page that the miner will have access from, for example, 7.00 a.m. to 5.00 p.m. five days a week for the term of the exploration licence. That could go on for six years; it could go on for 26 years.

CHAIR: Under a mining exploration licence it could go on for 17 or 18 years.

Ms POTTS: Absolutely. There you have a landholder who has simply no control over their land and no real ability to conduct their activities because for the next 26 years, from 7.00 a.m. to 5.00 p.m., they will have a miner walking in and out.

CHAIR: Have you instituted in your document somewhere the idea of time limits within agreements as well?

Ms POTTS: Yes. I will draw a picture on the whiteboard. My view is that an access arrangement should be structured as an umbrella agreement. That is quite a common form of agreement. For example, when a lawyer gives legal services they will enter into an arrangement with their client to provide those services as and when the client gives them instructions. You have a set of umbrella provisions and each time the client gives instructions you have a sub-agreement.

CHAIR: So it is like a retainer agreement.

Ms POTTS: Yes. The umbrella agreement then allows for sub-agreements which relate to particular approvals which are gained under the Environmental Planning and Assessment Act. For example, each time a review of environmental factors [REF] is entered into there will be a sub-agreement for that particular REF activity. That activity may be simply drilling two holes. One hole takes four weeks to drill so that is an eight-week agreement. If they want to drill them concurrently it could be a four-week agreement. The landholder then knows that according to that REF the miner has said that it will need only four weeks maximum to drill those holes. You have a sub-agreement for those holes. Meanwhile you have a security which is entered into in favour of the landholder. Under the legislation a security is provided to the Government. Generally securities for exploration licences are for no more than $10,000. That does not go very far when you are trying to repair an aquifer, for example. It does not go anywhere.

You also have, I believe, an ultimate holding company guarantee because the mining companies are using project-specific vehicles to run their projects. If you have an ultimate holding company guarantee in favour of the landholder when the miner winds up its project-specific vehicle, the ultimate holding company, which is generally a publicly listed company which could be around for a good deal longer than the project-specific vehicle, will still be there. It can still be called on if, for example, you have contamination of the overlying aquifer. The umbrella also provides for environmental insurance which is in favour of the landholder. Public liability insurance does not cover pollution contamination events. There are now entities that are providing insurance for pollution and contamination events.

There are various other provisions. These provisions will apply each time the miner wants to extend its project. That particular arrangement will then be negotiated as and when the miner has actually submitted its REF, for example, to the Department of Primary Industries.

The Hon. JEREMY BUCKINGHAM: So that umbrella agreement covers all the actions—exploration, REF, pilot production. Each of those agreements is a separate entity under that umbrella. You have exploration, pilot production, production, expanded productions, modifications et cetera.

Ms POTTS: Yes. Currently the legislation provides only that the access arrangement must be entered into before the miner begins its prospecting activities, its exploration activities. There is no legislative requirement for the miner to enter into an access arrangement for production activities. The assumption in the case law is that the access arrangement will continue for the entire term that the miner is undertaking activities on that particular land, but that is not the case according to the drafts of the access arrangements, for example the draft of the NSW Minerals Council template. What happens is that the term expires when the exploration expires. The landholder has no legislative right to demand an access arrangement for production. There has been one case on this, the Gatenby case in the Camden-Campbelltown region. The miner then demands access of the landholder. The landholder in that situation said, "No, I am not giving you access." They went to the Mining Wardens Court and the mining warden said that the miner had the right of access; it had a production lease. However, the miner must go to the Minister to get a right of way to the production lease area. The miner in that case, Sydney Gas, did not go to the Minister to seek the right of way.

The Hon. Dr PETER PHELPS: Just on that point, we have received alternate legal advice which says that section 71 says that no mining operations are permitted on land under cultivation except with the agreement of the landowner.

Ms POTTS: That is land under cultivation.

The Hon. JEREMY BUCKINGHAM: Cultivation is different too. Cultivation is a defined term, is it not?

Ms POTTS: Unfortunately it is not largely defined as, for example, agricultural land is defined in the Mining Act. The Petroleum (Onshore) Act simply refers to cultivated land or land under cultivation and says that that does not include pasture grasses. The Mining Act in schedule 2 provides an entire schedule related to what is agricultural land and gives a very good and detailed description of what is agricultural land. In my submission I believe the Mining Act definition of agricultural land could be imported into the Petroleum (Onshore) Act.

CHAIR: Again it goes back to your earlier assertion that the Petroleum (Onshore) Act is pretty crude.

Ms POTTS: It is unsophisticated. That is not surprising. We have really had only 10 years of activity under this Act—well, more than 10 years but 10 years of production under this Act, which is the production at Camden and Campbelltown. One more thing about the umbrella, and the most important, is that before any activity goes on with the miner a baseline study is done. That baseline study would be hydrogeological; hydrochemical; interconnectivity between the coal seam aquifer and any overlying aquifers, but not just for water; an agronomist to determine what cultivated land there is on the property before the activities begin; a vet to look at animal health for air and water pollution issues; and a doctor, because in order to establish an evidentiary basis from which a landholder can take any action for negligence or nuisance they need evidence. That evidence needs to be able to establish damage. Damage can only be established if you have a baseline and monitoring.

CHAIR: For example, the practicalities of trying to establish a baseline for interconnectivity on deep aquifers probably can only be tested by putting in monitoring bores. How would that activity fall in with this?

Ms POTTS: The way I have suggested it in my draft access arrangement is that the landholder engages the specialists.

CHAIR: Paid for by?

Ms POTTS: The miner pays. Those specialists do the baseline studies and they determine when and where the monitoring should occur. They do the monitoring over the life of the activity and they set safe levels of particular chemicals in the bore water that is also on the property. They set mitigation measures that must be undertaken if those safe levels look like they are going to be breached, and they also determine the rehabilitation measures.

The Hon. SCOT MacDONALD: I see where you are going in a rural sense or an isolated sense. How does that translate to St Peters where there is huge background noise on any data? There are hundreds of aircraft, diesel buses and God knows what else. I know everything is supposed to be pure in St Peters but how do you measure that?

Ms POTTS: That is your baseline. Your baseline is aircraft, traffic, pollution from cars. Largely, what I have just explained is what is set out for amendments for part 4A. The other important thing is to contain a concurrent breach provision, say, for example, a breach of the legislation, regulations or the actual tenement will allow the landholder to deny access. The remedy for a landholder is not compensation. The remedy for a landholder is to gain control over their land. It is denial of access. That is also a remedy which will not cost them money. They simply close the gate. That is then contractually enforceable. These are the other miscellaneous amendments, I would say—

CHAIR: Again under part 4A?

Ms POTTS: Yes, under part 4A. The legislation refers to the New South Wales Minerals Council but that is not really the peak body for petroleum. It should be the Australian Petroleum Production and Exploration Association. Once again a template should be evenly cast. I have talked about the Minerals Council riding across the protections in the restricted areas and fees. At the moment the legislation provides that initial legal fees will be covered by the miner. I have seen a number of these access arrangements where the initial legal fee amount is $500. I can happily tell you that medium-sized Sydney law firms charge $650 an hour so $500 would not even give you an hour of work. If you really want expertise then you go to the top firms and you pay $1,000 an hour. So $500 could not even be looked at by an expert in the area as a complete fee.

My view is that all legal fees should be paid. I have heard AGL and Santos, et cetera, say that it would pay them all, but my understanding that that is not the case and that landholders' decisions with respect to the access arrangements are largely governed by cost. If they have to fork into their pockets for large amounts to negotiate access arrangements on their own behalf they do not want to. They are annoyed at the fact that they have to. They know that it is not going to be covered by the miner, or they are going to have to fight the miner or order to do it. They are backed into a corner on legal fees. I really think that all legal fees and specialist fees that we talked about should be covered. Once again, denial of access is the major remedy.

Arbitrators do have the right, contrary to what I have heard on a number of occasions, to refuse access. The right is there in the legislation. They can refuse access. Justice Schmidt in her decision in Brown gave a reason why they could deny access and that would be inadequate—

CHAIR: Is that under the Mining Act?

Ms POTTS: The provisions of the Mining Act and the Petroleum (Onshore) Act, with respect to the arbitrators' rights and powers are exactly the same. The Schmidt decision was under the Mining Act.

CHAIR: When you say Brown, was that the BHP matter?

Ms POTTS: That is right. Justice Schmidt said that if there was inadequate protection of the land in the access arrangement or in the operations suggested by the miner, the arbitrator could deny access. However, I have heard a few of the panel of arbitrators say that they would only deny access in exceptional circumstances. I think that bar is too high. Parts 5 and 6 of the Petroleum (Onshore) Act talks about restrictions on titles. This is where exempted areas can be prescribed. The Minister can prescribe urban areas, catchment areas, vulnerable aquifers as areas which cannot be mined on.

The Hon. SCOT MacDONALD: It doesn't leave much, that top line—the Murray-Darling Basin and the Great Artesian Basin.

Ms POTTS: Yes. Also, under section 22 (5) of the Petroleum (Onshore) Act no compensation would be payable for those protections. As I have said, we need to work water into the protection of the environment provisions so that the Minister can consider the protection of water. Those suggestions are set out. Rehabilitation is also another matter which needs consideration. Rehabilitation under the Mining Act is simply to make stable. Making stable is not returning to original condition, or better than original condition. In my view, it should be better than original condition. Royalties and fees—

CHAIR: We are now looking at parts 7 and 8

Ms POTTS: We have heard about the five-year royalty holiday. I think that royalties should be charged up-front at 10 per cent and that those royalties should be utilised by the Government to do, for example, bioregional studies, to ensure that there is sufficient people within the department to police—

CHAIR: To clarify, at 10 per cent of what?

Ms POTTS: This is a good question because that figure is at the discretion of the Minister, and we are not told what it is.

CHAIR: You referred to 10 per cent of what, the predicted—

Ms POTTS: Of the production.

The Hon. SCOT MacDONALD: Value?

Ms POTTS: I am not sure whether it is production. It is determined by the Minister. We do know that in 2010 the total royalties for coal seam gas in New South Wales were $462,000. That would have been from the Camden Gas project, the AGL project.

CHAIR: Where did you get the figure of 10 per cent?

Ms POTTS: Ten per cent is in the regulation but there is the royalty holiday for the first five years and then it goes 5 per cent, 6 per cent, 7 per cent, 8 per cent, 9 per cent and 10 per cent.

The Hon. RICK COLLESS: That 10 per cent is on production? What you are suggesting is 10 per cent of what, prior to production?

Ms POTTS: No, it would be on production but 10 per cent up-front so there is no royalty holiday.

The Hon. SCOT MacDONALD: Just like Queensland?

Ms POTTS: Just like Queensland.

The Hon. RICK COLLESS: So, in the exploration phase there is not royalty?

Ms POTTS: No royalty.

The Hon. SCOT MacDONALD: Just the same as the other States?

Ms POTTS: Just the same as the other States. Registration of the petroleum title, as far as I know, is not required to be made on the land title. People are buying land—and I have heard instances of this—where there are petroleum titles on the land. They have found out subsequent to the acquisition they cannot get out of the acquisition. I believe that the miner should register the title on the land title as well so that purchasers will not be caught blind with petroleum titles on their land, particularly if it is a production title. We have talked about the compensation regime.

Finally, parts 13 and 14 relate to release of information and miscellaneous. Information is not readily available at the moment of the activities of the miners. In particular, I do not think that the public wants to know the commercial information but they certainly want to know what the work program is. They want to know what the reporting of the work program is. A landholder has the right to know what the miner intends to do on its land. At the moment under the legislation some information is available two years after the fact, and opinion information is available five years after the fact. That is too late. It should be available immediately. It should be available to the public when the applications are made.

The Hon. JEREMY BUCKINGHAM: That is the first time I have heard that. A lot of people say they want notification that exploration is going on but you are going a step further that when the exploration title is created by the Minister that that is when people should be informed? That is quite interesting. It is like a pre-application notification?

Ms POTTS: Yes. I think the most offensive of the provisions of the Petroleum (Onshore) Act is the last one, 134B, consents of landholders. Under this provision, if the miner cannot find the landholder after diligent inquiry they can simply walk onto the land and commence their activities. In the worst case scenario that means they can walk onto the land—there is no access arrangement obviously, no compensation paid—and drill wherever they like whenever they like on somebody's land without that person knowing.

CHAIR: There is also the aspect in the Brown v BHP case where other persons with an interest in the land were not able to be notified?

Ms POTTS: Absolutely.

CHAIR: So it extends just beyond the person who is on the land, whoever that person may be—the title holder, anybody with a registered interest, a mortgagee?

The Hon. JEREMY BUCKINGHAM: What is diligent inquiry? Do they knock on the door or yell over the fence?

Ms POTTS: Exactly. There is no explanation of diligent inquiry.

The Hon. JEREMY BUCKINGHAM: That is not a defined term?

The Hon. Dr PETER PHELPS: Surely that is an evidentiary issue.

Ms POTTS: It would only become an evidentiary issue when the landholder returned.

CHAIR: Does that conclude your presentation?

Ms POTTS: That concludes my presentation.

CHAIR: We do not have a lot of time for questions but you have left us with a copy of the presentation. There will be questions from the Committee. Are you prepared to take questions on notice from the Committee concerning your presentation?

Ms POTTS: Yes, of course.

CHAIR: We would require the answers by 30 January 2012.

Ms POTTS: I will do my best.

CHAIR: This morning the Committee resolved to publish the expert advice it received from Mr Whitehouse on its website. Would you look at that and see how it accords with your recommendations.

Ms POTTS: Yes.

CHAIR: Does your presentation have a copyright on it?

Ms POTTS: You can use the presentation.

CHAIR: If we are going to inform the Legislature as to what we think it should be doing, we would like to be able to do so with impunity.

Ms POTTS: Yes, of course.

The Hon. JEREMY BUCKINGHAM: You have had quite a bit to do with the AGL Camden project. Will you advise the Committee of some of the issues you saw with that project around water and water monitoring?

Ms POTTS: I was informed by one of the residents in the Camden-Campbelltown area that AGL had admitted in a community consultative meeting that it had done no water monitoring. I thought that is a bit of a concern. As a consequence, I thought I would look at the legal implications of that. What are the obligations of AGL under the Petroleum (Onshore) Act, under its production leases and licence and under its environmental protection licence for water monitoring? Under the Petroleum (Onshore) Act, as I said, there is a requirement to provide samples to the Government but that is provision of samples from the wells, that is not water monitoring. That would not be monitoring the water in the bores so the Petroleum (Onshore) Act was not useful.

Then I obtained copies of AGL's production leases. They have petroleum production leases Nos 1, 2, 4, 5 and 6. There are only six production leases in New South Wales, all the rest are exploration licences. One is held by Eastern Star Gas, now Santos—that is petroleum production lease No. 3. I went through petroleum production leases Nos 1, 2, 4, 5 and 6. Nos 5 and 6 are not operative as yet—they are for stage three—so it was really only Nos 1, 2 and 4. The obligations under those petroleum production leases are to ensure there is no pollution and contamination, which is fine. How do you ensure that there is no pollution or contamination?

The Hon. SCOT MacDONALD: Without that background data?

Ms POTTS: Exactly. The implication is that they must monitor in order to ensure that there is no pollution or contamination. However, if they do not do any monitoring then, of course, they will not find any pollution or contamination. This morning I was speaking to a member of the Environment Protection Authority about AGL's environmental protection licence, which I have here. I was looking at the protection licence because I wanted to know whether the protection licence required them to do water monitoring—there is a water monitoring provision in the protection licence. There is no obligation in the protection licence to monitor water except at the particular sites and they are all related to the Rosslyn Park plan. They are not bore water within the production lease area. The monitoring of that water is not for fracking chemicals. It is not for BTEX chemicals,

saline or increased saline or methane. It is for chemicals that one would not expect to be in your fracking chemicals.

CHAIR: Perhaps the Environment Protection Authority knows something that we do not.

Ms POTTS: I have heard that subsequently the Environment Protection Authority has set up a coal seam gas team and that the head of the coal seam gas team was going to give me a call. Certainly its obligation under its environment protection licence vis-a-vis pollution is in the stricter sense. So it must not cause pollution. Pollution is defined in the Protection of the Environment Operations Act to be simply a change of state. It is a very strict requirement but if it is not monitoring—

The Hon. Dr PETER PHELPS: And if you do not have a baseline—

Ms POTTS: That is right. Well they do have a baseline. Sydney Gas (Camden) Operations Pty Ltd, which held petroleum production leases Nos 1, 2 and 4 before AGL took over, in 2001 did a very limited baseline study, as I understand it—I have not seen the baseline study. AGL, as we know, has the right to frack. It has fracked 117 of its 137 wells. I do not know how many times it has fracked those wells but even if those wells have only been fracked once and it is using the volumes of fracking chemicals that are set out in volume one of its environmental assessment, then on my calculation—which could be wrong—I understand that there is between 285,000 litres and 528,000 litres of fracking chemicals, which have been used in petroleum production leases Nos 1, 2 and 4.

CHAIR: Is that the quantity of the chemicals or that quantity of the fracking mixture?

Ms POTTS: Chemicals.

CHAIR: Alone?

Ms POTTS: Chemicals alone.

CHAIR: So the water would be on top of that?

Ms POTTS: Water is on top of that, yes.

The Hon. JEREMY BUCKINGHAM: Under its petroleum production lease it was required to do some sort of monitoring?

Ms POTTS: The petroleum production lease is not that explicit. The petroleum production lease says it must not contaminate or pollute.

The Hon. JEREMY BUCKINGHAM: The environmental protection licence for Rosslyn Park relates to other chemicals, but it says "pollute" as well.

Ms POTTS: The environmental protection licence says it must not pollute, it must not breach section 120 of the Protection of the Environment Operations Act, which is "must not pollute". It must monitor but it is only required to monitor at well sites, not at bores or in creek water.

CHAIR: Ms, Potts thank you for your detailed evidence and the recommendations you have given. I wish every witness would give as detailed recommendations as you have. The Committee needs people to give their opinions as to what we can actually do. The Committee will probably have some questions on notice given the detailed nature of your submission. The Committee would appreciate it if you could return your answers to those questions by the end of January.

(The witness withdrew)

(The Committee adjourned at 5.35 p.m.)