AUSCRIPT AUSTRALASIA PTY LIMITED
ACN 110 028 825

T: 1800 AUSCRIPT (1800 287 274)
E: clientservices@auscript.com.au
W: www.auscript.com.au

TRANSCRIPT OF PROCEEDINGS

TRANSCRIPT IN CONFIDENCE

O/N H-1247452

INDEPENDENT PLANNING COMMISSION

MEETING WITH ENVIRONMENTAL PROTECTION AUTHORITY (EPA), DEPARTMENT OF PLANNING, INDUSTRY AND ENVIRONMENT (DPIE WATER) and NATURAL RESOURCES ACCESS REGULATOR (NRAR)

RE: NARRABRI GAS PROJECT

PANEL:	**STEPHEN O'CONNOR (CHAIR)** **PROF SNOW BARLOW** **JOHN HANN**
SENIOR COUNSEL ASSISTING:	**RICHARD BEASLEY SC**
OFFICE OF IPC:	**STEPHEN BARRY** **CASEY JOSHUA**
EPA:	**CARMEN DWYER** **GARY WHYTCROSS** **CURTIS ATTARD**
DPIE WATER:	**MITCHELL ISAACS**
NRAR:	**GRAEME WHITE**
LOCATION:	**VIDEOCONFERENCE**
DATE:	**10.37 AM, TUESDAY, 28 JULY 2020**

MR O'CONNOR: Good morning. Before we begin I would like to acknowledge the traditional owners on the land on which we meet, and I would also like to pay my respects to their elders past, present and emerging. Welcome to this videoconference today to discuss the proposed Narrabri Gas Project in the Narrabri Local Government Area. My name is Steve O'Connor. I am the chair of the commission panel. Joining me are my fellow commissioners, John Hann and Professor Snow Barlow. Also in attendance is counsel assisting, Richard Beasley SC, Stephen Barry and Casey Joshua from the Office of the Commission.

In the interest of openness and transparency and to enable full capture of the information today, the videoconferencing is being recorded and a full transcript will be produced and will be made available on the Commission's website. The videoconferencing is one part of the Commission's decision-making process. It's taking place at the preliminary stage of this process and will form one of several sources of information upon which the Commission will base its decision. It is important for the Commissioners to ask questions of attendees and to clarify issues whenever we consider it appropriate. If you are asked a question and not in a position to answer please feel free to take the question on notice and provide any additional information in writing which we will then place on our website.

To ensure the accuracy of the transcript I request that all members today introduce themselves each time they – before speaking and for members to ensure that they do not speak over the top of each other. So before we begin we might must go around. I don't know if your screens are the same as mine when I say in a clockwise direction but we might start with John. Do you just want to introduce yourself, please?

MR HANN: John Hann, IPC panel.

MR O'CONNOR: Richard.

MR BEASLEY: Richard Beasley, counsel assisting.

MR O'CONNOR: Snow.

PROF BARLOW: Snow Barlow, IPC panel.

MR O'CONNOR: Casey.

MS JOSHUA: Casey Joshua, the Office of the IPC.

MR O'CONNOR: And our next person. I'm sorry I can't - - -

MS DWYER: I'm not sure what order we're in but I'll take the go.

MR O'CONNOR: Thank you.

MS DWYER: Carmen Dwyer. I'm the executive director of regulatory operations for the New South Wales EPA.

MR O'CONNOR: Thank you. David. You will need to turn your mic on, David.

MR KITTO: David Kitto from the Department of Planning, Industry and Environment.

MR O'CONNOR: Thank you.

MR YOUNG: Mike Young, executive director of energy resources and compliance at the Department of Planning, Industry and Environment.

MR O'DONOGHUE: Steve O'Donoghue from the Department of Planning, Industry and Environment, director of resource assessments.

MR O'CONNOR: Yes. Graeme.

MR WHITE: Graeme White. I'm a director with the Natural Resources Access Regulator.

MR O'CONNOR: Thank you. Curtis.

MR ATTARD: Hi. I'm Curtis Attard, operations officer with the New South Wales EPA.

MR O'CONNOR: Thank you. Mitchell.

MR ISAACS: Mitchell Isaacs, director, Office of the Deputy and Strategic Relations in the Department of Planning, Industry and Environment, Water.

MR O'CONNOR: Gary.

MR WHYTCROSS: Gary Whytcross. I'm regional director operations for the Environment Protection Authority.

MR O'CONNOR: And last but not least, Steve.

MR BARRY: Steve Barry, planning director at the Office of the Independent Planning Commission.

MR O'CONNOR: Thank you everyone. Just getting those voices sometimes helps in – I understand, in terms of the transcript. So we might begin by just asking perhaps the representatives of the EPA just to explain what they see their role as in terms of the lead regulator, in regulating this project if it were to be approved. I'm not sure who the spokesperson might be.

MS DWYER: Sure. I might start, if that's all right, Steve. So the government made a decision to – after an independent inquiry by the then New South Wales Chief Scientist and Engineer, Mary O'Kane, to appoint the EPA as the lead regulator for all coal seam gas activities back in 2015. The – that decision was, you know, on the public record. There's a whole heap of reasons for that, including the fact that the EPA has got over 30 years as the primary environmental regulator in New South Wales and has extensive experience and bespoke legislation to enable it to regulate an industry like the coal seam gas industry, including that we have extensive investigative and regulatory powers. Our role is to regulate all conditions of consents that relate to the coal seam gas industry as they are written, with the exception of those that relate to work health and safety.

MR O'CONNOR: And, Carmen, you might just explain how your role differs from that of the Natural Resource Access Regulator, or how you see that, and obviously we will put that question to Graeme as well.

MS DWYER: So the Natural Resource Access Regulator is – definitely, you know, Graeme is better placed to speak about what their actual function and role is but they sit into the system with an approval and consent body. But as the lead environmental regulator around coal seam gas, if there is a matter that comes up for coal seam gas, it is – the EPA has a responsibility to ensure that it's complied with.

MR O'CONNOR: Thank you, Carmen. What about your response, thanks, Graeme?

MR WHITE: Okay. So I'm going to say NRAR because that's a lot easier than repeating the name every time. So NRAR has a role as the licensor of SSD projects. So if the project was to be approved and there were water licences that were required, NRAR would be the licensor. And then Carmen is right, the EPA would take the lead role in regulation of the project but we would certainly support that role, including help, as would DPIE Water who has some expertise around the water take and the modelling and those sort of issues. So would still support that compliance and enforcement role, but the EPA would lead on that, as they – yes, as they have already in that space.

MS DWYER: And if I could add to that, Steve, we get support and guidance from all of the State Government agencies in their area of expertise when it comes to enforcing the conditions of any of the consents.

MR KITTO: David Kitto here, Steve. I think it's worth pointing out, in terms of that regulation role, that once a project is approved, like the Narrabri Gas Project, it will have a planning consent, it will have an environment protection licence, it will have petroleum production licence. It would need – and it would also need to have water licences. So there would be a range of instruments produced under different legislation that would be – regulate the activity. I think it's important to distinguish that in any conditions there are ongoing authorisations that are required and there are also things where there is strict compliance required.

For instance, if you have to have a water management plan approved prior ..... or a field development plan approved or a whole range of things, which is really a refinement of the rules that are set for the operation of the coal seam gas activity, you know, some of those ongoing authorisations would still be given by Department of Planning, Industry and Environment, or by NRAR in terms of water licences, or Mining, Exploration and Geoscience in terms of some of the petroleum production licences – some of those things.

So there would be an ongoing role for agencies post-approval, if it is approved, but the EPA would be solely responsible for enforcing compliance and checking compliance. So I think it's – there will be a collective role but when it comes to enforcement and compliance, and those things, the EPA has the sole role and all the other agencies will provide an advisory role. And I think that's sometimes missed in that EPA will be doing everything if it's approved. That's not – that's not the case and that was never the intention.

MS DWYER: It might also be helpful - - -

MR BEASLEY: David – sorry. Richard Beasley. David, and maybe Graeme will add to this, or Carmen. I don't care. But does that – in terms of the EPA having the chief role of compliance, does that include in relation to water licences though, or is that NRAR that's mainly in relation to compliance for water licences and if there is a breach, deciding what to do about that breach?

MS DWYER: That's still the EPA, though we - - -

MR BEASLEY: That's still the EPA?

MS DWYER: In all of the spaces we still take advice and, you know, gather information and expertise about how the policies were set up or how an Act was set up from the agency that has got that level of information and intelligence about it. But ultimately the regulatory decision sits with the EPA in terms of compliance and enforcement.

MR BEASLEY: Right.

MR O'CONNOR: If that's clear now, let's move on to one issue that has been raised on a number of occasions during the public hearings, and that's the concern about the uncertainty about how the waste from the extraction of the salt through the reverse osmosis plan, how that waste might be disposed of. There's a number of options but nothing has been clearly defined at this stage. And the fallback position that has been put to us is that it would be taken to a licensed landfill, but no specifics about which landfill that might be and whether it has the capacity to accept that waste, etcetera. So can we hear perhaps from the EPA about what their views are on that issue of land disposal of that waste?

MS DWYER: Certainly. So we certainly think waste disposal is an important matter that needs to be managed closely. I understand that a waste management plan is something that would need to be developed by the company, should it receive approval through this process. And then we would be looking for that waste management plan to follow the well-established waste hierarchy in terms of trying to deliver beneficial re-use as its first priority, and then stepping through the waste hierarchy as a last resort being disposed of to land. Now, in terms of – my understanding is that there are a range of options in that sort of higher part of the hierarchy where it could potentially be managed prior to having to be land-filled. But ultimately the content that we have that is available to us suggests that if it had to be land-filled it is classified as a general solid waste, and therefore could go to general solid waste landfills.

MR BEASLEY: Richard Beasley. Sorry, do you say it would be classified as general solid waste?

MS DWYER: There's a waste classification framework in New South Wales that steps through what is in the product, what its leachability is. There's a whole range of scientific assessments - - -

MR BEASLEY: Yes.

MS DWYER: - - - that go into classifying the waste into particular categories. And if you fall into those categories the higher up the categories you go, the higher the environmental management controls are that are on those wastes and they need to be managed in a particular order, in a particular way. General solid waste is – means that it can be – it can go to any landfill that is classified as a general solid waste landfill or above.

MR BEASLEY: I think you're probably aware of this, then, that one of the main objector groups to the proposal has sent to the commissioners a report from Professor Khan for the University of New South Wales. And for the assistance of the commissioners I will just get your response to this, and anyone else that feels they're able to assist. But his – to summarise what he is saying in relation to the waste classification guidelines is he is saying that they weren't really, in his view, developed for dealing with huge quantities of salt waste such as this, that for Santos to give indications of the chemical composition of this waste is missing the point that the guidelines just weren't set up to deal with such huge amounts of salt waste and that they're therefore inappropriate, if you like, in relation to dealing with what's going to be produced at a CSG mine in terms of salt waste. Is there a response you have to that?

MS DWYER: I can't really comment on Dr Khan's report without having read it, so I can only go the question of the robustness of the waste classification guidelines. They have been around for sometime and Gary or Curtis might actually know the date of those. But they are – they cover a very broad range of possible wastes, including those that had not been thought of at the particular time of the waste

guidelines being developed. And so if you do not fall into one of the sort of stock standard categories then you have to go through a high level of assessment and analysis before you can get classified into one of the waste categories. So – I mean, I think the waste classification guidelines are quite broad and quite – and are designed to cater for both wastes that were known at the time and wastes that were unknown by increasing the level of scrutiny required, depending on the novelty of the product.

MR BEASLEY: Sure.

MS DWYER: But, Gary, do you - - -

MR BEASLEY: Sorry, just for Gary's assistance – I don't think – Richard again. I don't think – I got this report yesterday so it has been a pretty high-level reading of it.

MS DWYER: Okay.

MR BEASLEY: But with that in mind as a proviso, I don't think – my reading of Professor Khan's report that has been provided to the commissioners, and also what he said on Thursday in his submission, is not that – I think he accepts that if you look at the chemical analysis of the potential contaminants in the salt, they will be below the contaminant thresholds for the guidelines to still be classified as general solid waste. But I think he is making a broader point that if you look at what does get classified as general solid waste it tends to be things like glass, plastic, rubber, plasterboard. He gives these examples. And he is saying that the – in his view, the guidelines weren't developed to deal with a huge volume of waste material that's dissolvable in water as well. I think that's his fundamental point.

MS DWYER: And – accepting that you have only had it for a few hours to read as well, and not being able to be clear about what exactly the point is that he is trying to make, I think what is important to remember is that disposal is the last option in the waste hierarchy. So the waste hierarchy and the waste framework has – requires you to try and manage your wastes at the upper end of the pyramid first. So if it is possible that there is a beneficial reuse option, that would be the one that would be expected to be explored first, and then step through to the final disposal of residual matter. So what that may mean is – and this is what is to be determined through a waste management program, but I'm just saying in terms of the guidelines they are actually designed to accommodate and take into account that you have to do the higher order things first, and what that means is you end up with the smallest amount possible that is actually going to landfill.

MR BEASLEY: So that's – Richard again. That is – that's consistent, I suppose, with the proposed conditions which – I'm looking at B63, the proposed conditions. The first thing that's mentioned is:

Reasonable and feasible measures to maximise the beneficial reuse.

And lower down the hierarchy, as you call it, is dispose of it at a licensed waste facility. So that's a lower order thing that has to be done but ..... - - -

MS DWYER: That's the last thing that you do.

MR BEASLEY: - - - ..... is beneficial reuse - - -

MS DWYER: That's right.

MR BEASLEY: - - - if possible.

MS DWYER: Yes.

MR WHYTCROSS: It's Gary Whytcross here. Sorry, just a quick comment there. So the idea of actually classifying the waste, as Carmen said, when you get to the bottom, is to make sure whatever waste you're putting in a landfill can be put there in a way that it can be interned safely without leaching into groundwater, etcetera. And so obviously liners and those things are important in terms of any consideration of disposal of this waste. But as Carmen – so if any of it does end up in a landfill the EPA has the criteria and the standards to make sure that it doesn't cause a problem. But, as Carmen said, the waste management plan will hopefully be looking at, you know, minimising the amount that needs to go into landfill if that's the case.

MS DWYER: And, Richard, to that specific - - -

MR BEASLEY: Can I ask both – sorry to interrupt, Richard, again. Can I ask both of you a follow-up question on this issue, that I'm raising because it has been one that a number of objectors have raised. Leaving aside whether something can be done in relation to beneficial reuse of the waste, whether it's bicarb or whatever, in relation to – if it has to go to a waste facility one of the things that the objectors have been saying is that Santos has had this project on the boards for quite a number of years and has still not got any agreement from a waste facility to take the salt waste. So they're questioning whether it's even feasible if it has to be disposed of at a waste facility that that can be done simply because Santos don't have anything concrete in place at the moment for that. Do you have a comment in relation to that?

MS DWYER: Certainly. If – Richard, if I can answer a question you asked earlier - - -

MR BEASLEY: Yes, sure.

MS DWYER: - - - which is - - -

MR BEASLEY: Sorry. Yes, go ahead.

MS DWYER: - - - solubility and leachability are both something that is assessed as part of the waste management guidelines, so they are included. I really can't

comment on the commercial conversations that Santos has had with possible landfills or not. That's outside of my space. What I can provide the Commission is that if it needed to go to a landfill, or a component of it, it could go to a solid waste landfill or higher landfills. There are a number of those across New South Wales. It becomes a cost issue in terms of which ones it's taken to and what agreements are reached with the individual landfill operators. But I can't really comment on the commercial conversations Santos has with operators.

MR BEASLEY: Sure. Understood.

MR O'CONNOR: Okay. Just – any further questions from Snow or John in relation to the disposal of waste?

MR HANN: Not from me. Thanks, Steve.

MR O'CONNOR: Okay. We might move on then to the issue around just guarantees and insurance, and I note from an EPA policy called Safeguarding Future Environment Liabilities from Coal Steam Gas Activities in New South Wales, released in February, there's a statement there that says that agencies will require CSG operators to hold insurance or:

...prove to the EPA the existence of sufficient potential clean-up funds.

Would you just like to comment on that, please, just what the practicalities of securing insurance or what sort of security might be held in terms of potential clean-ups?

MS DWYER: So you're obviously aware of the three-tiered system for New South Wales, starting with the bonds that are issued – the bonds that are required to – by the mining departments, and then the insurance assurance piece, so – and then the legacy mining program. So the insurance assurance conversation reflects that the type of mechanism that you hold is one thing but what is most important is making sure that you actually have the funds secured to adequately cover a clean-up should it be required. I think it's always important when we're having this conversation to reflect that the whole idea here is that you actually identify the risks beforehand. You mitigate the risks and what you're actually to insure or assure is what's left over at the back end of that.

And so the EPA has powers in the protection of the Environment Operations Act which allows it to issue – to require financial sureties, whether it's insurance or assurance. We have a number of those in play already across a variety of industries, and that can go to bank guarantees, insurance about – confidence around capital assets and maintaining capital or other financial arrangements to ensure that the funds are there for clean-up if they're required. And of course that's all underpinned by the polluter pays principle which is the fundamental principle of the Protection of the Environment Operations Act. So there's a variety of powers that are afforded to the EPA then to enforce those kind of cleanups.

MR O'CONNOR: And what about in terms of guarantees to adjoining landowners, etcetera, that those assurances, whatever might be used, if their land is impacted in some way?

MS DWYER: So I think it's again that framework of you're trying to identify all the risks. You mitigate against all of the risks. So there are six codes of practice at least in New South Wales that go to identifying minimising and mitigating any risks to ensure that they don't occur. So then you're left with quite a – you know, a rare situation should a risk – should a risk eventuate. And then the clean up – the requirement to clean up is across both private and public land. So if for some reason after all of those other mitigations you have got in place there was a spill that was on both the company's land and off to another land, that would still be required – it's required to be cleaned up on both. The entire incident is required to be cleaned up.

MR O'CONNOR: What if that – the impact was actually in an aquifer rather than on a surface impact, like you have referred to a spill? What about the practicalities of undertaking remediation of an aquifer?

MS DWYER: Yes. So again I think it's this – it really has to be – there are any number of hypothetical kind of potential risks that could be highlighted but it can't be taken as you've just got to this point. So by the time you have got the well integrity codes of practice, the aquifer interference policy, all of the other groundwater protection measure in place, and they're being enforced and regulated, the risks that you end at the other end of that are in the minor – the more minor scale, providing if – applied the entire framework that sits before the insurance assurance piece. So I'm not sure specifically what kind of event we would then be talking about to be able to talk to the practicalities of doing something about it.

MR O'CONNOR: What if you had some saline water, you know, infiltrate a shallow aquifer?

MS DWYER: Again I'm not sure how I can talk to that if – you've got to do that front end piece about what is the risk and the likelihood, and then what is the volume and scale to be able to talk to the practicalities of resolving it.

MR O'CONNOR: But surely you must go through - - -

MS DWYER: It's just a bit difficult to - - -

MR O'CONNOR: - - - that process to be able to ascertain what sort of security that you would need? You must have to go through this exercise of looking at potential events that might happen and therefore what sort of remediation is possible and therefore what sort of funds need to be secured?

MS DWYER: That's absolutely right, Steve. So we do need to go through that process but we can't go through that process until we know whether something has been approved and what is actually approved. So then once you have got what is

approved we can go through what are the residual risks based on the approval and the constraints and conditions that have been put around that risk, what is the risk likelihood and consequence on the back end of that, and then how do you set up to cover any issue that might arise at the back end of that. But without knowing what is actually approved and what controls are on it you can't do the last piece which is what's the residual risk and how do we mitigate and manage it.

MS DWYER: It's David Kitto here, Steve. I just want to backup what Carmen is saying in terms of obviously we have done a risk assessment. There are some uncertainties. We are seeking to do everything we can to mitigate those. And our assessment at this stage is that the residual risks are quite low. We do recognise that there are people in the community and other people that think the risks might be higher, and so on, but I do think, you know, you can get into quite a speculative game about all the risks that are – that we're dealing with in terms of the integrity of the wells or in terms of the aquifers and how they move.

But certainly we're not – you know, there is no evidence at this stage from our perspective that there is likely to be significant saline – salinity coming into the – you know, the beneficial groundwater resources. So – I mean, you could come up with bespoke risks things to deal with every potential case but that's not – that's not what we're anticipating at the moment. I think what Carmen is saying we do have the three tiers, so you do have the security bonds. You will have some insurance assurance. That will be adjusted over time as ongoing risk assessment occurs, if the project goes ahead. So that insurance ..... you might start out quite low.

Based on whatever the findings there are and adaptive management and so on, you might adjust those insurance assurance things but that will be there. There is always the potential for the government to step in through the legacy funds. But I do think there is a whole range of other mechanisms that could be brought into play if these sorts of things happen. So we have mentioned before the ..... loss provisions within the Petroleum (Onshore) Act which is obviously any third party can take – can act upon and so on.

There are also common law protections for property damage and so on, and then there are a whole range of powers in both the Planning, Environmental Protection, and the Petroleum legislation where regulators have the power to require clean ups and so on, because the sorts of impacts that some people are talking about, Santos would be in breach of the conditions if those actually occurred because there are, you know – there are performance measures and standards and so on that they need to comply with.

And a lot of what the community's really concerned about would, you know – would be a blatant breach of, you know, the – the conditions. And so you do have a whole range of enforcement powers where you can require clean ups and impose penalties and go to court and do a whole range of things. So I do think it's not one instrument that will do the job in this instance, and I do think it's something that will be under constant review and will be adjusted over time. But certainly based on our – our –

our current assessment, you know, we're not expecting significant residual risks and/or risks that cannot be managed, you know. We may gather information over time that says we need to adjust that slightly, but I do think we have the tools and the powers available to be able to do that.

PROF BARLOW: Steve, it's Snow Barlow here. Can I just ask you another question. David and maybe others as well – one of our concerns in this is you're dealing with, you know, underground aquifers, and you are also dealing with, you know, a – the Great Artesian Basin, which is, you know – it is an underground aquifer, but it's a very big one. And so, therefore, you know, you talk of clean up, but once that spill has happened it's hard to see how you're going to clean it up in groundwater.

MR KITTO: I suppose it's – oh, it's David Kitto here. When you say "spill", is that – are you talking about a spill on the surface?

PROF BARLOW: Well, there's a surface spill but also there's ingression from below, David.

MR KITTO: So I – I guess, you know, from a surface point of view those things should be easy to detect. I think we were – we had some discussions with the – the Water Expert Panel on some of those things. In terms of how things are regulated on the surface, you know, that should be easy – easy to detect and to prevent. You've got ways of lining the ponds and so on, so I do think you can control those risks on the surface to a very high degree and, you know, so I think that's the easier one to deal with. When you're dealing with the underground systems, I guess you – you know, one of the critical things we've asked ourselves is what are the pathways for that sort of pollution to occur.

Certainly it's the wells in and of themselves and – and, you know, what we're saying is that if the wells are drilled in accordance with the code and all the measures – you know, it's drilled and it's operated and it's maintained and plugged and abandoned in accordance with the code, the risk of that creating a pathway would be very low. I guess the second pathway – the key pathway would be through some, sort of, faults or structures and what we – what – what – what we say at this stage is we don't have any evidence of major things at a regional level. There may be localised faults and so on, but if there are impacts that are coming from those we would expect them to be highly localised, and the push would be to try and avoid that through any regulation and ongoing, you know, review and approval of field development programs.

So I guess it comes to what are these mechanisms for the impacts to occur, and I – I guess we haven't – we haven't identified anything where, you know, there's a – there's a high likelihood and a significant consequence that might result. You know, these – these, sorts of, high risks that you would be very concerned about and then want to put in an extra degree of protection to deal with those issues. So it's – it's quite hard to deal with in an abstract way, but I guess, you know, those would be the

primary mechanisms, and I think we've looked into those and we still don't see there being a high risk and a significant consequence resulting based on the evidence that we have. So - - -

MR YOUNG: It's – it's Mike – it's – it's Mike – Mike Young here, Snow, and I just add to that that clearly the – if we're looking at likelihood, which is – David's mostly touched on there and so forth in terms of the risks being low, etcetera, and the pathways being limited, and I think we heard from the expert panel – the Water Expert Panel that the – the geology itself and the fact that the – the pressure gradients and the salt gradients etcetera indicate that the connectivity between surface aquifers and deeper aquifers is very limited through geological time.

And I take your point though, if there is any leakage of – in the very unlikely event that there be any localised leakage of saline water, etcetera, into beneficial aquifers, I think what we also heard from the Water Expert Panel that – those things would be detected through the relevant controls that would be put in place on those wells, etcetera, because obviously there'd be an issue with pressure or other issues that are not functioning well with the – with the particular gas well. And so the idea that you would then have any significant migration of large volumes of contaminated or saline water into the aquifer – I'm not sure that that's a realistic risk, given the – the understanding we have of both the geology, the extent to which that material migrates.

I think John Carter indicated, you know, the porosity of the surrounding rock and – and strata and so forth is relatively low. And so whilst you may get some localised migration of saline water, both the time, the surrounding environment and then the dilution that would occur from a localised leakage – leak of saline water would – would be very limited. And I agree though that there is limited things you could do to clean up, but I wonder whether the consequence is relatively low and certainly there – where – as we've indicated, the likelihood is very low.

So I guess our assessment has indicated – and I guess we're struggling again to see we – we know the community keeps raising this, but we're really struggling to see, you know, if – if – if these things do occur, you know, that that would be very localised and the – the – the issues would be not significant in terms of impacts on other users. So unless – unless you're able to point a particular example, Snow, that we're – we haven't contemplated, I guess we're struggling to see what the risk really is in regard to those matters.

PROF BARLOW: Mike and David, I suppose it's really – and this is market as well – is, you know, will there be a protocol that, you know, the failure or the leakage, say, of depressurisation has to be reported immediately and action taken. Presumably the action in that is to plug the well, but, you know, there may be other remedial actions that can be taken as well. But I would have thought reporting to the public domain was crucial to this.

MR YOUNG: So Mike – Mike Young here. I'll – I'll kick off, and I guess I've got the advantage of being very close to the developing of those conditions that we've recommended to the Commission. Under those conditions you'd be aware, Snow, that there was a range of incident – both detection requirements in terms of well design and well integrity and so forth, but - - -

PROF BARLOW: Yes.

MR YOUNG: - - - also there's a clear obligation – and this is separate to the statutory obligation which I'm sure Carmen will talk about in a minute, but even under the conditions of consent we've got a clear requirement that any incidents that are detected need to be reported immediately to the relevant authorities, and in – principally the EPA, and certain actions need to be taken immediately, and a review and a report needs to be prepared in regard to that – that particular matter. So – and – and over time those incidents and those reports and those investigations need – need to also be made publicly available, but the EPA also has protocols – statutory protocols in regard to that, so I'll let Carmen respond to that.

MS DWYER: So Carmen here. So that's right, Mike, and thank you. There – there is a legal obligation under the Protection of the Environment Operations Act to notify of significant environmental incidents to the EPA immediately, and there's also a requirement that the EPA puts on to all of its licences to hold a – what we call a PRIMP, a Pollution Response Incident Management Plan, and that requires – that – that sets up so in advance of any potential incident that companies have a plan for how they – who they need to call. That might include downstream users. It might include emergency agencies, the contact of councils. It has to be tested regularly and it has to be available to staff. So there's both a – a legal obligation and a practical obligation that we audit against to ensure that that, kind of, identification, notification and response occurs swiftly.

MR KITTO: So David Kitto here. Just to add another aspect, so I think, you know, advising of incidents and then what you do in response is – is one part of the picture, but – but the – the conditions envisage a lot happening before you get to that point. So if you look at the geological strata, the idea is there's a – there is a base line of sorts now, which is based on all the available information, and that base line will improve over time. And so the whole part of the conditions is to have that base line and to build on it over time, but to have monitoring going on in each of the key strata, but, you know – leading up to the surface, and because most of the activity will be in the deep strata what you'd want to have is a whole series of monitoring going on in the aquitards and so on and the levels below so that you would pick up anything happening in the geological strata a long time before it got to the beneficial aquifers and to take adaptive management measures to get there.

So I do think, you know, that there'll be monitoring in terms of structure. There'll be monitoring in terms of pressure response. There'll be monitoring in terms of the chemistry and what's going on. So there'll be a whole range of monitoring going on and there'll be trigger, action and response programs in place to deal with those

things. And you would expect that to pick up anything before you started reporting incidents to beneficial bores and so on in the beneficial aquifers. So, you know – or you would be avoiding putting wells in areas where there might be some geological structures that could create pathways and so on. As Peter Cook was saying this morning, he would not put the well in that part of the project area but another project area.

So I do think that risk based approach to regulation and management through trigger, action, response programs is a critical aspect. The other aspect is how you regulate the wells and the code has a whole range of measures there, you know. But if in 3 or 4 hundred years' time monitoring is showing that one or two wells, you know, are creating a problem – which is highly unlikely based on all the evidence we have, but if it has, you know, there are engineering solutions to deal with those things where you can drill it out again, put the steel in again, put the concrete in again and solve the issue. It may be expensive, but there are measures that could be done, you know, to remediate those sorts of things.

So I do think there are measures in the conditions to deal with this risk based approach, and certainly if there are incidents and so on, there are obligations under all conditions and all different legislation to report it and deal with it. And then it – as I said, there are powers in the Act where the regulators can require companies to do a whole range of things to address these sorts of issues.

MR BEASLEY: Sorry. It's Richard here, David. It's – it's not – and Carmen too. It's not just an obligation to report harm to the environment. It's an – it's an – an offence not to, isn't it?

MR KITTO: Yes.

MR BEASLEY: A criminal offence.

MS DWYER: That's correct.

MR KITTO: That's correct.

MR O'CONNOR: John, did you have a question in – just in relation to the modelling and – and how that might be developed over time and the transparency of that process?

MR HANN: John – John Hann here. Yes. Steve, this – this is probably, Carmen, primarily for you, but – and the team. It really – it – it's driven from the Water Expert Panel's recommendation. I think it's number 8 on page 47. But, look, it – it's talking about the establishment of a transient groundwater model which – which we understand, and we understand how that's intended to work, but it's really important for us to understand how the EPA will be accessing that model, how the monitoring data will be fed into it and how it will be available, that the – the results of the ongoing modelling and predictions will be available to all the relevant stakeholders.

MS DWYER: So, John, the – Carmen here, again – sorry – for the transcript. The EPA will be making sure that the monitoring has occurred and that the monitoring complies with any licence conditions that – that relate to it. In terms of ongoing assessment of the data and impacts, that's when our colleagues in – in RAA and others will be looking at that data and feeding it into, I – I'll leave it to Graeme actually to talk about where it might sit in terms of public register. I assume it's SEED, but I might – might have that wrong. And – and then any – any – any concerns or any issues that they have – that they see through that as the experts in that space they would provide back to the EPA to say, you know, "We're seeing a problem here. There might be a compliance issue. You need to check", but, Graeme, you might be better placed to talk to where the data is – how the data is available.

MR WHITE: Yes. Thanks, Carmen. Graeme White. The – the data from the monitoring in this case – unless it was a requirement – wouldn't necessarily be published. Our public register mainly relates to people that we've either prosecuted or issued a – a ticket to or those types of activities. I'm not sure whether we've required this information to be public. That would have to be a question for David, I think. We would certainly be looking at and also colleagues in DPIE Water would also be looking at it with the technical expertise around how, you know – what they would expect from the model and – and is it equating to what they're, you know – what they're actually seeing.

MR KITTO: I – David Kitto here. So I think we have had some discussions on this before, but, you know, there's the question of the model and the upgrade from the steady state to the transient model which needs to happen. There's also the – the requirement for them to collect a lot more data and to validate and calibrate that transient model over time so it's much better at that finer resolution or prediction, and that will occur. Now, in terms of the actual data that would be collected, we did discuss previously that some of that data will be commercially in confidence and some of that data can be made publicly available. I don't think there's any question that government wouldn't have access to all that data, whether it's commercially in confidence or could be made publicly available.

The government will have access to all of that data. Where that data will be stored hasn't – we haven't got to the end point on that, because we're still developing some of those cloud based systems where you could store this data. So at the moment the government is – is developing the SEED system and the data will go into, you know, the SEED system. Ultimately you would expect, but Mitch – Mitch Isaacs will be able to explain to you that a whole lot of water related systems where data is collected, both by government and from the private sector, and those systems will continue to be, you know – collect and use that data.

So I think there's a question of raw data and putting – making the data available in the cloud, and clearly the Chief Scientist said that, "You should be making as much of that data as you can be publicly available", and that is certainly government's intention with this project. I think there are other aspects related to this where the

public will need to see that compliance is, you know – that if Santos is allowed to go ahead and it carries it – carries the project out, you need to see that there is compliance. And I think that's another, sort of, reporting and so on that is done that will need to be made publicly available and that goes to the accountability or that you're complying with the conditions and that people can work out in a simple way what's going on.

Now, I don't think exposing the public to raw data is necessarily the best way to communicate what the impacts are and how that – so I think that reporting will happen in a simpler way, or a summary of a lot of that data will happen on the Department of Planning's website and other websites where there's a requirement in the conditions – the planning conditions to say that they need to monitor and publicly report on the performance, which is not the raw data, which is sometimes what people talk about when they want access to all the data. So there's an obligation to report and that will clearly not be all the raw data. That will be a summary of the data and analysis and an explanation of what's going on.

And there were also requirements in the conditions for independent audits and so on which will then need to be made publicly available, and then there will also be the independent experts and so on on the monitoring panel that will be reviewing the data and explaining that in a simple way. So I do think in terms of keeping the public informed of compliance and accountability and what the impacts are, there are obligations in the conditions that will allow that, but at the same time, you know, the government will be collecting data from its deep monitoring bores.

Santos will be collecting data and government will be collecting data from other groundwater users in that area that will be put into a database – whether it's SEED or some other database – and – and – and all the access – all the regulators would have access to that data, and as much of it as possible would be made publicly available in the cloud for multiple users – for other users.

MR HANN: Oh, thanks – thanks – thanks, David. Thanks, Carmen.

MR YOUNG: Yes. Mitch, maybe did you want to comment on any of that? It's Mike Young here. Mitch, do you want to, sort of, comment - - -

MR ISAACS: Oh - - -

MR YOUNG: - - - just from DPIE Water side of things?

MR ISAACS: Mitchell Isaacs here. So, look, only really to say that from our perspective the important thing is that there's a clear expectation and requirement that the relevant and necessary data is reported publicly through a suitable electronic format in an easily accessible location. I – I don't think there's a, you know – governments change and projects have quite a long timeframe, so I don't think being prescriptive about exactly where that data is held is necessarily helpful as long as

there's a clear expectation that it's in the right place and government has control and ability to make sure it goes into the right place.

From our perspective about how we use the data and – and look at the model, I mean, we really spend a fair bit of time looking at the data used in developing and updating the model, making sure (a) that they're collecting the right data to be able to inform the data, but then (b) that they're also using the right data in the right way to inform that update of the model. So - - -

MR HANN: Thank – thank you, Mitchell.

MR O'CONNOR: I've got a further question – Steve O'Connor. And this would be, I think, to you, Carmen, at the EPA. I understand that in the final advice from the EPA of February 2020 there was concern about vague phrases like, "All reasonable and feasible measures", "As soon as practicable", "To the greatest extent practicable", and a request that they be replaced with more measurable and quantifiable measures or methods. Are you satisfied with the conditions that have been recommended to the IPC that the – that will allow you to undertake that enforcement role that the EPA has responsibility for?

MS DWYER: Thanks, Steve. So I think all of the conditions are enforceable. The – the point of our – our correspondence previously is about providing that clarity about what does compliance look like. How does it – how is – how does someone assure themselves that compliance has been – is what was expected and anticipated in the question, but to – to the panel's – and to be absolutely clear, we do believe that all the conditions are enforceable.

MR KITTO: So – so, Steve, David Kitto here. Just to reinforce that, I – I think, you know, it's with the Land Environment Court, you know. The – the concept of reasonable and feasible has come out of judgments in the Land Environment Court. I think the Chief Judge himself was involved in the definition of those aspects. So I do think there's quite a long history of their use within – certainly within the planning legislation for dealing with some things where setting a – a one size fits all numerical standard is difficult. And that – that does apply when you're dealing with some natural features like aquifers and so on where things change over time. So I do think the concept of reasonable, feasible is a – is a strong one, and I do - - -

MR BEASLEY: They're – they're – sorry. Richard. They're defined – you've define those terms - - -

MR KITTO: Yes.

MR BEASLEY: - - - in the proposed conditions, haven't you?

MR KITTO: Yes, yes.

MR BEASLEY: Yes.

MR KITTO: So feasible is can it be done in an engineering sense. Is it technically possible?

MR BEASLEY: Yes.

MR KITTO: And reasonable comes down to, you know, the judgment about whether the costs or what it, you know – the costs are justified, whether the risks are significant and so on, so there are a number of factors to deal with there. I – but I also think you need to see the management plan requirements as being a way that you start to fix – so you might start up with a whole range of measures which then get narrowed down over time to some very specific measures which are signed off in the management plan that then become a – a – a clear expression of what measures need to be implemented in terms of those reasonable and feasible measures. So I do think that's where the management plans have an ongoing function in the conditions, is to actually start to take a whole range of measures down and to bring them down to some specific measures which are then enforceable.

PROF BARLOW: Snow Barlow here, David, and my – we have these qualitative terms and, you know, they have been defined, but in terms of a reporting sense into the public domain, what do you think, you know, or what do you have in mind that, you know, when you report, you know, synthesised data and report on a six monthly basis, a yearly basis – what, you know – what's the timeframe of that?

MR KITTO: So David Kitto here, Snow. I – I think the timeframe will vary depending on what – what the monitoring relates to. So – and – and the risks involved. So it may be that certain things are, you know, real-time monitoring. Some things will be, you know, monthly. Some things will be quarterly, and then others – so the frequency will vary. And you may start out with the frequency being high in some cases, and then once you get a whole lot of monitoring data that shows there may be no issue here then the frequency may change. So I – I don't think the issue in a – in a planning consent that might last for 20 or 30 years – it's very hard to nail down the frequency up front because it will change over time.

So I – I think that's a job that's left for the management plans in terms of the frequency of reporting, so I – that's all I would say, is that I think it will depend on the issue involved, the level of public interest involved, the level of risk involved, and what comes out of the, you know – what the findings are as you go through the process and the frequency and the nature of that will be – will vary over time, but I think the principle is that the public should be informed of the impacts of the project in a – in a clear way at any stage of the project. And we do have powers - - -

MS DWYER: Snow - - -

MR KITTO: - - - if – we do have powers if – if there are interests in certain things. We can require monitoring to be done at any time and made publicly available. So we do have the powers to – to change that frequency if we think it's necessary.

MS DWYER: I was just going to add, Snow – it's Carmen here – it may be helpful to understand how we manage that in a – there are so many management plans and there are so many different timeframes for reporting. So the EPA has – since becoming the lead regulator – invested quite a lot in its ICT systems – its information technology systems. So we created a bespoke database that houses all of the conditions of all of the consents of all of the different agencies, and it has automatic reminders of that report is due, that monitoring is due, that is – that such and such is due.

So that's a way that our – that our operations officers can keep track of and not just, sort of, you know, having to manually flick through paperwork, but can have automatic reminders if something else is due, was it delivered, has it been delivered, if it's not been delivered how do you follow up, if it's been delivered is there any follow up from it. So there's a whole IT system that sits around managing and making sure that all of those conditions and expectations are met.

MR O'CONNOR: It's Steve O'Connor here. Carmen, just, sort of, follow up question there. Just we'd like to hear from the EPA about the – and you've just touched on it there – about the capability that the agency has to undertake this task in relation to this particular project. You've talked about the IT systems. Have you got the necessary, you know, skills – the, you know, range of expertise that's going to be needed to carry out this task, or does the agency need to build its capabilities if this project's approved and it proceeds? You've got a lead time and – and you can build to – to – to be in a suitable position to undertake that task.

MS DWYER: Thanks for the question, Steve. So we – the EPA since becoming the lead regulator jumped on the – the need to enhance our skillset and our capabilities back in 2014/15 when those changes were first made. So the EPA has employed a number of technical experts. So we have in-house hydrogeologists, scientists, petroleum engineers, spatial – GIS spatial experts, geologists as well as what the EPA always had around experts for air, water, noise, waste and rehabilitation. So we have those dedicated resources in-house. On top of that, we also have communication engagement teams and we have operations – a number of operations officers. So Curtis is with us today. He's one of the operations officers that's physically based in Narrabri.

We – we've had an office in Narrabri for a couple of years now. Now, one of the positions is currently being filled but – yes – that's, kind of, the ebb and flow of – of the positions. So we have a significant skillset there in terms of staff ability and capability and, of course, the ability to reach out into other agencies or to other experts to gain further information. So just to give you a sense of the scale of that, since becoming the lead regulator in 2015 our staff have undertaken over 920 field based inspections for what we deem as the, kind of – in the higher and medium risk categories. So that can be anything from methane monitoring, rehabilitation, well integrity, pollution management response programs, that – that breadth of conditions that is already in play.

So there's some significant experience building there. In terms of systems, we not only have the database that I talked about, but we invested in a 3D immersion theatre a number of years ago. This theatre allows us to have in-house training to ensure that our staff stay up to speed and – and maintain their skills around those things that are actually really hard to visualise. So if I can do my hands a little bit, but the 3D theatre allows you to go inside the theatre and you can have a drill bit coming down through the – along the screen so you can see how it interacts with a different aquifer or a different geology, and then what it means when a liner is put in. What it means when the second – when the pressure testing is done. And you can visualise all of that because you're actually in this immersion theatre.

So we have training facilities around that – both well integrity, hydrogeology, those kind of spaces, as well, of course, being able to tap into experts, as I said, and emerging science as we need to. We've got risks systems set up to monitor emerging scientific technologies or scientific developments or concerns so that we can be on the front foot of looking at those and understanding what skills we may need to manage and monitor those. I think the, kind of – the last piece of that is – is what is the risk for us as the EPA, and our biggest risk is actually in losing those staff through either, you know, ongoing conversations about who the regulator might be or – or – or suggestions that the regulator might change or through funding. So if – if those pieces aren't secure then the risk is that we do lose those skilled staff and then – then we have an exposure about our ability to ensure that we're undertaking compliance enforcement at that higher level.

MR O'CONNOR: Thank you, Carmen, for that response. Are there any other questions, either Snow or John or Richard, might want to pose for any of the participants?

MR BEASLEY: Look, I'll – I'll just ask a – a – a general question and I – I apologise in advance that it's a longer question than I'd ordinarily get away with, but it's an attempt to put into a question form what some of the objectors have been making submissions and – and indicating a concern to the Commissioners about. I'll address it to – to – to Carmen and the EPA people, but it – it may be something that – that David and Mike want to express a view about. Leaving aside Professor Khan's opinion about the guidelines – and this, to an extent, picks up the issue that David just discussed about the words "reasonable" and – and "feasible". It relates to the – the conditions relating to waste – the proposed conditions in relation to waste.

But I – distilling what some of the objectors are saying, I think it's this, that the – an approval for this project shouldn't go ahead without something more concrete in place regarding waste, and as I understand it, I think what the Commissioners were having submitted to them was this, that if a waste disposal facility accepts this waste then there's going to be this huge amount of leachate that – and something has to be done with it. Either it has to be stored in perpetuity safely or some process has to happen to it, like reverse osmosis or something like that which would – would cost a lot of money. And I – I take Carmen's point that she can't talk to any commercial discussions Santos has had with a – a waste disposal operator.

But I think the thrust of the submission is it's unrealistic on the basis of what we know now to – to – to consider that it's likely that a – a waste facility will accept this waste and be able to either store it – store it in perpetuity safely or process it some way and there's nothing concrete from Santos in relation to the – the beneficial reuse of the – the – the – the salt such as, you know, bicarbonate production. We – we know they've got their MOU but that's obviously not a contract. So I – I think the thrust of the submission is that this is too uncertain and – and until something more concrete is in place regarding waste the project shouldn't be approved. Now, as I said, I'm – I'm directing that to Carmen and the EPA, but that might be also something that – that David and Mike - - -

MR KITTO: Yes.

MR BEASLEY: - - - want to say something about.

MR KITTO: So David Kitto. I'm happy to kick it off and then Carmen can carry it on, Richard. I think, to come back to the reasonable and feasible, I think from the feasibility point of view it is feasible to use the sodium bicarbonate to produce a product, and it is feasible to dispose of waste – waste to a landfill provided you have suitable liners and leachate systems and so on. So I don't think there's a feasibility issue in terms of dealing with the waste. And salt waste is generated in New South Wales through a range of activities every year. It might be the Murray-Darling Basin salt recovery systems. It might be - - -

MR BEASLEY: Don't talk about that, though.

MR KITTO: No, no. I won't. It might be the Kurnell desalination plant. There are a number - - -

MR BEASLEY: Yes.

MR KITTO: - - - plants and coal mines and so on, so - - -

MR BEASLEY: Yes.

MR KITTO: So – but from a feasibility point of view, I don't think there's any chance – the question about the feasibility of dealing with it. It comes down to cost, and I think from a beneficial use point of view, as Carmen is saying, in the waste hierarchy that's always the first thing to do. Whether there's a big enough market in Australia, whether it's, you know, financially viable, you know, whether it's a – it can be exported and used domestically, those are things that we, you know – they've been looking at in Queensland, but no one's quite come to an answer on that issue yet. So there's some uncertainty about the reasonableness from a commercial point of view and so on. And that needs to be certain. That needs further investigation.

And whether you can put the Narrabri salt with the Queensland salt and come up with something that's better and you get economies of scale, that's something that

can be looked at, but it's a question of cost. But I think if you get to the disposal side of things, the cost of it you can work that out now in terms of what a liner would be, where it would be. You'd need to have it all – all those things in place and – and so, you know, that's what – that's – that's an unavoidable cost that Santos – Santos as the polluter in this situation would have to pay.

So I – so I think it's feasible but it will come down to a weighing up of the reasonableness in terms of the cost and other factors. And I guess we don't know the final answer on that, but the default is that they will have to put it in a landfill with liners and so on, and there will be a cost, but Santos will bear that cost to ensure that it is properly managed.

MR BEASLEY: Carmen, did you want - - -

MS DWYER: I'm not sure that I can add much more to that well-rounded response.

MR BEASLEY: Sure.

MR O'CONNOR: So if there's no further questions from John or from Snow - - -

PROF BARLOW: I've got another question if you – a quick – a quick question, Steve. A couple of questions, actually, the first one to perhaps Graeme, but it may not be your job, Graeme. But I'm a bit – well, I'm a bit detained by the question that, you know – that Santos as this project proceeds needs to obtain groundwater licences for the, you know, something like 40 gigs that it will withdraw from the coal seams in the course of the project. The – and the question is then that's an entirely different formation and entirely different water quality than the surface, but would you require Santos – would you require Santos to compete on the freshwater market to buy the water rights for groundwater extraction for that salt water?

MR KITTO: So, Snow, I'll let – just in terms of the answer to that is there's a – there's a water sharing plan for the Namoi Alluvials for the Great Artesian Basin and for the Gunnedah-Oxley Basin, the deep aquifers. And there – there – they all set sustainable yields for all of those, and there are entitlements that can be bought for those markets. In terms of the deeper aquifer, because it's highly saline and so on, there's hardly any water being taken out of there because of the expense of getting that deep and then extracting that water, and it's not – it's not that good, the water there.

So there's hardly any entitlements that have been issued, so it will be incredibly easy for Santos just to get the entitlements for the 37 gigalitres that they need in that deeper aquifer. There's no competition, and as we say in our report, I think, the water they're proposing to take is about one per cent of the sustainable yield. That's – that's – I've outlined in that water sharing plan.

PROF BARLOW: Yes.

MR KITTO: So – so I think they have to have an entitlement there. That's the easy one to measure. It's more about the entitlements in the – in the GAB and the Namoi Alluvials that's the issue because that's a harder thing to pick up in terms of, you know, measurement because there's so much else going on in those aquifers. And that's where the model becomes the critical determiner to working out what the – what sort of entitlements they would need to have in – in those aquifers.

PROF BARLOW: Thank you, David. That, sort of, answers the question that they would actually like the extraction licences for that salt water from a different basin.

MR ISAACS: Yes. Mitchell Isaacs here, if I might, Snow, and, David. Look, the basic principle is if they're taking water from a water source or what we'd designate under our legislation as a water source they must hold a water access licence with sufficient shares to take that water. So they're primarily taking, as David said, from the Gunnedah-Oxley Murray-Darling Basin water source, but in doing so they will start to induce flow from other water sources, which includes the Southern Recharge to a much smaller amount and then, to an even smaller amount, the – the model's saying a very, very small amount from some of the Namoi Alluvial aquifers.

So the principle is if they're going to be, as a result of their activity, leading to water coming out of one of those other water sources they need to hold shares in that water source. So, for example, if they're going to take five megalitres from Zone 5 of the Namoi Alluvial aquifer – and I don't know if that's the – the number, but that's just an example. If they're going to take five megalitres then they need to buy five megalitres on the market, and that's competing in the freshwater, but that's to ensure that their activity doesn't disadvantage other licence holders. Now, where they're taking most of their water from, which is the Gunnedah-Oxley Basin, that – that water source still has unassigned water.

So the amount of water that is issued – the amount of water licences is well under the sustainable limit for that water source, and the New South Wales Government periodically issues what are called controlled allocations where we do a – effectively a – a tender process for a – water users, if you like, to purchase shares in water sources where there's still unassigned water. So in that Gunnedah-Oxley Basin, which is where most of their water is going to come from, they wouldn't be competing with freshwater users. But if they're taking water from a freshwater aquifer, such as the Namoi Alluvial aquifers, those don't have unassigned water and they would be competing on the freshwater market, but the volumes are much smaller than that deep aquifer.

PROF BARLOW: Thank you. That's – that's clear. My final question, Steve, is the model – we – we understand there would be one model and we understand that it's going to transition from a static model to a transient model. Who's actually going to create that model? Who's going to run that model and who's going to update it from time to time, as I realise everyone will have access to the model, but who's going to be in charge of it?

MR KITTO: So David Kitto, Snow, and feel free to jump in, Mitch. I – I think it will be Santos that will be the convenor of the model or the, you know – the – they will hold the data. They will – it'll be their intellectual property and so on, so it will be Santos' model, but government has the powers to require them to run that model in a whole lot of different ways, to require them to collect data and to feed it into the model, so I guess it will be Santos' model. Santos will be responsible for running the model and so on, but the – the government has the power to – to require them to – to run various scenarios and to collect the data and so on. So I think it will be – it will be Santos' model is the simple answer.

MR BEASLEY: Sorry. Are we – we're talking about the groundwater model. Correct.

MR KITTO: Yes, yes.

PROF BARLOW: Yes, yes.

MR BEASLEY: So – so the – the – the proposed condition is – is that it's Santos that's got to update the model, but in consultation with DPIE Water, EPA and Water Technology Advisory Group is what's proposed. Correct.

MR KITTO: Yes. That's correct. Mitch, did you have anything to add?

MR ISAACS: No. Other than the – I mean, the most important things are knowing how the model's set up. So it's using, you know, recognised software, using recognised methods, and then understanding the conceptualisation, understanding the parameters, and all of those things are integrated. The actual storing and the running of the model effectively just requires a whole lot of computing grunt, which we don't necessarily want to have to do. I know that peer reviewers or some of the peer reviewers when they do a peer review they will sometimes rerun the model themselves because they're often modellers that do this sort of thing, you know.

But some of the – the modelling peer reviewers will do that, but I don't know that all of them do that. The most important thing is understanding how the model's – model's constructed, how it's run, what the parameters are, what the conceptualisation is, not who's actually physically doing the computing grunt.

MR KITTO: So – so, Snow, I do know in Queensland, you know, there is a government department that has a model, but the – but the circumstances there are a bit different and why, you know – how that model came about. So in that situation you have several large projects in the Surat Basin, which is quite shallow. You know, the – the coal seam gas extraction there's reasonably shallow and occurring in the actual aquifer that the farmers and so on are using. And in Queensland also, you know, the operator – the mining operators don't require a water licence like they do in New South Wales, so it's a – it's a – if you – if you – if you get approval to do a gas project you – by rights you get access to take the water.

You don't have to have a specific licence. Now, in Queensland because you had so many companies operating next to each other there were cumulative impacts in those areas and it was very difficult to individual conditions of approval to work out who would be responsible for – for – for managing all of those impacts, and so in that situation they did pass legislation in Queensland where, I think, it's Office of Groundwater Assessment or whatever the name is there. They built a model and they get all the data from the various companies and they feed that into the model and then they assign who's responsible for managing those sorts of impacts.

So there – there is a precedent for government authorities to have a model or an independent model, but I guess, you know, in this instance we are dealing with one project. We're not looking at a whole range of cumulative impacts that would need to be managed in any way. And so, you know, the – the idea of Santos having the model and government having oversight of that model and being able to require changes is seen to be sufficient at this stage. I think at any time if the context changed, you know, government may get into the, you know – the regime of having an independent model, and that was certainly something that was flagged in the Chief Scientist and Engineer's report, but I think it was – it was based on a certain scale where cumulative impacts, like you have in Queensland, may arise.

And so this idea that you would necessarily – that, you know, you would need to have one for every project I think is probably a – a, sort of, you know, misconception of – or a misreading of, you know, the Chief Scientist's recommendations. So I do think there are precedents for independent government monitoring. I just don't think they necessarily apply in this context, but I think it's important that you do recognise that there are different regimes in other places that some of the community may be referring to.

MR O'CONNOR: You're right now, Snow, in terms of questions?

PROF BARLOW: Just – just a comment, really. In that area, of course, there are other users, so this might be the only coal seam gas project, but there's a whole lot of agriculture and there's a whole lot of agriculture that's utterly dependent on that water, so I'm surprised that it is – the model's going to be run by the mining company.

MR O'CONNOR: We might leave it at that. That was just a – a comment, not a question.

PROF BARLOW: Thank you. Yes.

MR O'CONNOR: And draw this session to a close. I'm conscious that we've used all the available time, so I thank everyone for their participation in this Q and A session that the IPC was keen to run. Thanks particularly to EPA, the National Resource Access Regulator, and, of course, the department – both its water section and – and other sections within the department. It's been very helpful and we appreciate the time and effort you've put in to preparing to be able to answer those

questions. I'll – I'll call to – an end to the transcribing now for Auscript's purposes. Thank you, all, and I'll say good morning.

PROF BARLOW: Thank you.

MR BEASLEY: Thank you very much.

RECORDING CONCLUDED **[11.57 am]**