

# TRANSCRIPT

## STANDING COMMITTEE ON THE ENVIRONMENT AND PLANNING

### Inquiry into unconventional gas in Victoria

Hamilton — 23 September 2015

#### Members

Mr David Davis — Chair

Ms Samantha Dunn

Ms Harriet Shing — Deputy Chair

Mr Shaun Leane

Ms Melina Bath

Mr Adem Somyurek

Mr Richard Dalla-Riva

Mr Daniel Young

#### Participating Members

Mr Jeff Bourman

Mr James Purcell

Ms Colleen Hartland

Mr Simon Ramsay

#### Staff

Secretary: Mr Keir Delaney

Research assistants: Ms Annemarie Burt and Ms Kim Martinow

#### Witness

Mr Peter Wilson (affirmed), Branch Manager, Asset Planning, Wannon Water.

**The CHAIR** — Peter, thank you for your presentation that you have handed out here. Could you speak to that briefly, and then we will ask some questions.

**Visual presentation.**

**Mr WILSON** — Thank you, Chair, for the opportunity to present at the inquiry on behalf of Wannon Water. As part of my role as branch manager of asset planning, I am responsible for water resource planning at Wannon Water. I have been associated with water supply in the south-west for over 25 years. Wannon Water is a statutory water corporation established under the Water Act 1989. Wannon Water provides water and sewerage services to communities in south-western Victoria from the Gellibrand River in the east, which you can see on the screen, to the South Australian border and north to Balmoral.

Water is supplied to 83 000 people across our region using surface water, such as protected catchments in the Otways and the Gellibrand River, and groundwater sources, such as the shallow Port Campbell limestone aquifer and the deeper lower tertiary aquifer. The green-circled towns on the screen are those that are 100 per cent reliant on groundwater — so a significant proportion of our communities.

Figure 2 shows the declared surface water catchments in the bottom right-hand area depicted with the dotted blue lines.

The green there is the lower tertiary aquifer, which supplies the towns of Port Campbell, Peterborough, Timboon, Port Fairy, Portland, Dartmoor and Heywood. This map shows the salinity level, which is highly variable, and the dark blue areas are those of much higher quality, which is where we extract from.

Figure 4 shows the recharge area for the lower tertiary aquifer. It is a bit difficult to pick up, but there is a red line that heads off from Hamilton down across to Dartmoor and then up north around the Casterton area and back down. This demonstrates that the recharge area and the aquifer are not the same spot. Aquifers often recharge in areas beyond where the actual aquifer lies.

Wannon Water supplies water to a significant number of dairy farms for cattle consumption and use in dairies, which is a very important industry in the region. The major milk processors in the region, Murray Goulburn, Fonterra and Warrnambool Cheese and Butter, together with Midfield Meat, which is an export meat processor, are all major customers of Wannon Water.

Wannon Water is regulated under the Safe Drinking Water Act to provide safe drinking water requiring the preparation and implementation of risk management plans associated with the supply of drinking water. It is not Wannon Water's role to comment about the benefits or otherwise to the state of Victoria of unconventional gas exploration, extraction or processing but to ensure any risks of these activities to our water resources are appropriately managed.

The water studies commissioned by DELWP were recently presented to Wannon Water staff. Figures 11, 12, 13 and 14 are extracted from the report and show the prospective gas reserves. The first one is shale gas, which is shown by the dark brown area on the left-hand side; so it is a relatively small area that has been identified, but there is a larger potential in the grey band across the region which covers a substantial part of the Dilwyn aquifer.

The coal seam gas, the green spots relatively small in area, some of those do go into the recharge areas of the lower tertiary aquifer. I use the terms Dilwyn and lower tertiary: they are one and the same thing.

The conventional gas is predominantly occurring down around the Port Campbell area, with existing gas wells and gas processing plants. I will discuss the next slide a bit later.

The report concludes that there is a low risk of depressurisation of aquifers, low risk of contamination of groundwater from fracking fluids, low risk of induced seismic activity and low risk of land subsidence. However, it was noted that these assessments were based on the prospective areas only, and there is considerable uncertainty due to limited data availability.

Unconventional gas exploration, extraction and treatment pose risks to groundwater and surface water quality and availability that would need to be better assessed for specific sites. The geology of the region; its aquifers; the aquitards, which is the barrier between different aquifers; water flow; salinity level; and depths are highly

variable, meaning that risks will vary from site to site. Some sites may have an unacceptable risk compared to other sites, particularly when a community's water supplies are at stake.

Figure 5 shows the variability of the lower tertiary aquifer from Portland down to Hamilton. The right-hand side of the diagram is basically the ocean and the left-hand side is inland. As you can see, the aquifer drops away and becomes very deep towards Portland, which is why the water supply for Portland comes from a 1200-metre-deep bore compared to Heywood, which is around 600 metres deep. This diagram also shows the recharge area in the top left-hand corner, but it also depicts that there are aquifers above the lower tertiary aquifer that infiltrate down and feed that aquifer.

**Mr LEANE** — Can I just ask relative to this, I have to admit I do not understand what a recharge area is. Could you expand on that?

**Mr WILSON** — Yes, certainly. A recharge area is an area where the predominant amount of water that gets into that groundwater resource enters the ground. In some cases a recharge area is quite defined. In other cases it is quite dispersed and it is leached from above from another aquifer.

**Mr LEANE** — Great. Thank you.

**Mr WILSON** — Some matters that do not appear to have been specifically addressed in the studies are: (1) the risk of water contamination during the construction of any gas production bore that has to drill through these aquifers that are used for irrigation and urban consumption — for example, drilling muds and other contaminants that might enter into the aquifer as the hole is drilled through it; (2) what standards will apply to the design of the bore casing to ensure it does not fail where it passes through the aquifer; (3) how will the gas companies know if a bore casing has fractured and contamination of the aquifer is occurring; and (4) when the bore is at the end of its life and needs to be decommissioned, who will make sure it is done effectively to seal the hole that has been created through the aquifer so as to avoid cross contamination from other aquifers as the casing corrodes away. This is a small list of items that I have identified from the brief reading of the hundreds of pages of documents that were provided as part of the study. They may have been covered in those documents, and I may have missed them.

The current regulatory framework for the exploration and extraction of unconventional gas does not require a planning permit or a referral to water corporations. Thus even if the works proposed in our water supply catchment in the Otways will pass through one of these aquifers that we use for supplying a town, we are not advised of it. The water corporation has no opportunity to influence what conditions should apply to these works.

Wannon Water considers that the regulatory framework should be revisited to require any application for unconventional gas exploration, extraction or processing to be referred to the relevant water corporation, such as Wannon Water, during the planning and approval stage. This would allow Wannon Water to assess the risks to our water sources and place appropriate conditions on works to mitigate those risks before the works commence. Such an approach already exists for works that require planning permits in our water supply catchments, so this approach is not unique. That concludes my statement and presentation.

**The CHAIR** — Thank you, Peter. My question is about that issue of the consultation with Wannon Water. I imagine that with many works though there is unofficial consultation, if I could put it that way, where the relevant department with carriage of the matter would in fact consult with a whole range of different groups, including water authorities in a particular area.

**Mr WILSON** — I have been in the role of planning for probably 15 years now and I have never been approached by any of the gas companies or the relevant departments as to what the risk might be.

**The CHAIR** — That is helpful to know. The other question I had is a very simple one around the depth of that aquifer — the tertiary aquifer. Presumably the water bores that are put in also go through a whole series of other structures, including other aquifers, on the way through?

**Mr WILSON** — Yes.

**The CHAIR** — We have heard many things about concrete in bores and so forth. Are you confident that your bores cannot lead to any mixing of aquifers or any other untoward damage?

**Mr WILSON** — That is a very important issue when you come to the design of a particular bore to make sure that it has the appropriate sealing between the various aquifers, and the construction methodology allows for that to work properly. It comes down to the selection of the appropriate bore casing materials so that you have a long life asset there that will not corrode away and fail. Those sorts of things are taken into account during design. Wannon Water wants the maximum length of life it can get out of these bores, which is typically in the order of 25 to 40 years, depending on the materials and the depth et cetera. We are confident that our designs do take into account the sealing of the various aquifers.

**The CHAIR** — Forgive me for putting it in this direct way, but you cannot be absolutely sure with a water bore when you drill deep down through many aquifers that there is no environmental damage coming from that. You could get movement between different aquifers and the system could fail under some circumstances.

**Mr WILSON** — The way they do it is to drill a pilot hole and then put a probe down that actually determines where each of the aquifers lies in that vertical profile. They install casing down to particular levels and then concrete the various aquitards to stop the movement of water between one and another.

**The CHAIR** — But you cannot be absolutely certain that under no conditions or under no failure of materials that there would not be mixing between the aquifers.

**Mr WILSON** — You cannot be absolutely certain. I would say that we would pick it up through the water quality that we sample frequently to determine whether there is a cross-contamination issue. That is how we would pick it up if it was not working as we expected it to.

**Ms SHING** — Thanks, Peter, for your contribution today and the submission that you have made. Your submission refers to Dairy Farmers, Murray Goulburn, Fonterra, Warrnambool Cheese and Butter, and Midfield Meats as major customers of Wannon Water. I would like to get a sense from you of the positions that they have taken and/or any concerns expressed to Wannon Water about the effects of unconventional gas and what these might mean for them and their markets.

**Mr WILSON** — I am unaware of them approaching Wannon Water in that regard at all. I think they are very confident that the water quality they receive from us is of a high standard and will continue to be of a high standard.

**Ms SHING** — Have they come to you in relation to any concerns about cross-contamination between aquifers in line with the position that the Chair just put to you about an inability to guarantee to the best extent possible non-contamination wherever possible?

**Mr WILSON** — No, we have not been approached by them at all, to my knowledge. Certainly I have not in my role as the asset planning manager. I mentioned before that the risk of our bores being cross-contaminated is quite low.

**Ms SHING** — What do you mean by quite low?

**Mr WILSON** — It is controlled. We have good processes for design, review and construction that make sure that it is built correctly. I am not saying that the petrochemical industry does not. We have got no idea. We have never been involved with that side of the business.

**Ms SHING** — In the event that you are sinking a pilot hole with a probe and then casing beyond that to create a mechanism to extract, how do you best understand the different qualities of water that might exist across various aquifers through which that bore might travel?

**Mr WILSON** — There is water sampling done as the drilling occurs. But before we even start, there is a very good understanding of the hydrogeology of the area and where the best sources of waters are. In most cases — in fact all cases of bores in the last 15 years that have been drilled — it is not a new aquifer entry; it is an existing bore that we are replacing with a new bore, so we already know what is down there, if you like, and we know which aquifers we want to target from a water quality and yield point of view.

**Mr DALLA-RIVA** — Following on the question that the Chair asked and Harriet sort of continued, we keep on hearing about the inadequacy of the drills that bore down into potential gas lines. When you are drilling

down to the bore to get the water you are constantly testing the water; is that right? So if there is any contamination between the aquifers, you can pick it up straightaway?

**Mr WILSON** — No, not during construction. Once it is constructed we continually monitor the extracted volume of the water that we extract and make sure that it is within the expected parameters of the aquifer that we have targeted.

**Mr DALLA-RIVA** — Have you had examples where you have had a failure, where you have identified another aquifer as being broken into, be it through seismic shift or some other catastrophic failure of the pipeline?

**Mr WILSON** — Have we had occasions of that?

**Mr DALLA-RIVA** — Yes, have you had that experience?

**Mr WILSON** — No, we have not.

**Mr DALLA-RIVA** — Do you have processes and procedures in place if that happens?

**Mr WILSON** — We do.

**Mr DALLA-RIVA** — What do you normally do — in five words or less?

**Mr WILSON** — We have frequent inspections of the borehole to determine its condition, and — this is ideal — prior to it catastrophically failing you seal it up. You decommission that bore and you drill another one.

**Mr DALLA-RIVA** — How do you seal it up?

**Mr WILSON** — There is a recognised process. The drill rig is used to perforate the casing and pump concrete into the void between the casing in the borehole and then seal the whole lot up with concrete.

**Mr DALLA-RIVA** — How long does that usually last? How long would that last for?

**Mr WILSON** — The intention is it lasts forever.

**Mr DALLA-RIVA** — It would not though, in reality.

**Mr WILSON** — Concrete is a very robust material. Unless you have a lot of corrosive elements that are going to eat it away over time, it is considered to be the best practice in bore decommissioning.

**Mr LEANE** — In relation to the recommendation you made at the end of your submission around oil and gas companies and changing our regulation system where they must go through their water authority, are there any examples of other mining activities where that is the case as well — that there is no regulatory onus on them coming through your authority if they are going to do an activity that may affect your water supply? Are there any other examples?

**Mr WILSON** — No, my understanding is that the regulatory framework for petroleum and mineral exploration bypasses planning processes, and it is the planning scheme within a shire that provides the trigger for us to be referred for a particular issue.

**Mr LEANE** — I just wanted to get on our radar if there were any other areas that we needed to look at as well, because I think that is a fair recommendation and concern that you put to the committee.

**Mr WILSON** — Other than unconventional gas is what you are talking about?

**Mr LEANE** — Yes.

**Mr WILSON** — Certainly anything that drills a hole through the ground exploring for minerals or whatever else is in the same boat. It introduces similar risks.

**Ms DUNN** — Thanks, Peter, for your submission today. I just want to explore further the water authority's role in relation to compliance around bore failure. You have a direct role in relation to that?

**Mr WILSON** — No, groundwater bores are all administered by Southern Rural Water rather than Wannon Water. We make application to Southern Rural Water to put a bore down. We make application to them to decommission it. We make application to them to extract water from it. They are the regulatory agency.

**Ms DUNN** — Your submission today talks about the posed risks to groundwater and surface water quality and availability. Has Wannon Water done an in-depth analysis to assess those risks? I am just wondering how in-depth the authority has gone in terms of looking at all the potential risks.

**Mr WILSON** — At this point in time, no, we have not. We are aware that there is a moratorium on and this inquiry is taking place, so we are waiting for the results of that. There has been some good work done by the department and their hydrogeologists. For us to satisfy our own concerns we would engage experts in the field to do further analysis if there was a particular proposal brought before us.

**Ms DUNN** — You mentioned four different points that did not appear to be specifically addressed in those studies. I am interested in your views on where to go from here. Do you think that really these matters are ones that should be further explored by the department before any decisions are made in relation to unconventional gas?

**Mr WILSON** — My answer to that I think depends on the regulatory framework that is going to result. Those sorts of things could be dealt with as an application comes through, individually.

**Mr RAMSAY** — I just wanted to get clarification also in relation to your role in relation to permits. I remember in Torquay we had evidence from Barwon Water, who raised the same issue in relation to them not being required to be engaged in the permit process. From memory I think under the Petroleum Act they are, but under the minerals act Southern Rural Water is the regulatory authority that is to be engaged in that permit process. Barwon Water indicated also, like you have today, that they feel they should be engaged in that process given their knowledge and work in the aquifers. I agree with that. The other instance perhaps I can refer to is quarrying, where you have to get a licence to extract minerals out of the soil. Again, the only referral agency required under that permit process is Southern Rural Water also. I assume that just comes under one act, that minerals act, where local water authorities are not engaged, are not required to be engaged. You are submitting that they should be engaged under the change in the regulatory framework?

**Mr WILSON** — Yes, that is correct.

**Mr YOUNG** — Thanks very much your submission. The four questions that are on the back of this sheet, the matters that do not appear to have been specifically addressed, those questions I would imagine would be similarly asked by anyone drilling a water bore. How would the answers to those questions be different from a gas company than that of yourselves drilling water bores?

**Mr WILSON** — Apart from no. 3, which deals with the casing failure during its operation, you are right, the other ones are relevant to a water bore, same as a gas bore. I guess the reason that I raised these was that Wannon Water has good, robust processes in place to make sure that these issues are dealt with. I do not know that those same processes are in place for the gas industry.

**Mr YOUNG** — So if they were to come back with the same processes, that would be acceptable in Wannon Water's eyes, because they would be similar to the ones that you have in place?

**Mr WILSON** — It comes down to managing the risk. We manage the risk and make sure that the bore is constructed and designed to meet its design life of 40 years, let us just say. I am not sure what the design life of gas bores might be. Perhaps it is 25 years. That might mean a much thinner wall casing is specified in the construction, and that might lead to additional risks of failure in those 25 years. I guess it comes down to the ramification of failure as well, making sure that if a failure occurs, that the contamination that results is not catastrophic or can be corrected. With a water supply bore, if there is a cross-contamination of salty water with less salty water, then you have not destroyed the resource. I am not sure what other contaminants could come across from unconventional gas and how they would travel through the aquifer, but my understanding is that it introduces chemicals and products that probably would not be fit for human consumption. It is not salt.

**Mr YOUNG** — We have had a bit of discussion about our knowledge of underground water. Many people suggest that we do not know the full extent of how it behaves and where it reaches and what is connected to

where. In your opinion, how good is our knowledge of underground water? Do we have an extensive knowledge of it, and what needs to be done to further that?

**Mr WILSON** — Aquifers are highly variable. You can drill a hole 50 metres away and get a different quality water. Our knowledge is much better today than it was 50 years ago. We have spent quite a lot of money in researching the lower tertiary aquifer because it is so important to our region and we rely on it and we want to make sure it is there for the next 50, 100 years. I would say that there is still a lot of uncertainty about aquifer structures. Anything under the ground you cannot see, you do not really know until you drill a hole down and monitor the depths you go through and the type of strata that you pass through. My shortcut answer is we know more than we used to but there is still a lot of uncertainty there.

**Ms DUNN** — Peter, you spoke to Daniel in relation to the ramifications of failure and the potential for contaminants within that failure. I am just wondering, does the authority have a view on who should pick up the bill for any failure, particularly in relation to contaminants and contaminating water supply?

**Mr WILSON** — The polluter pays is always the principle that we have worked on.

**Mr DALLA-RIVA** — What happens if the polluter goes broke? What happens in that circumstance? How do you recover? What sort of processes do you have in place?

**Mr WILSON** — These are state resources, so I would suggest the state would have to wear the bill.

**Ms DUNN** — The taxpayers.

**The CHAIR** — Can I just ask one further very simple question. You obviously have a lot of experience with water across this region. We know that there have been a number of wells dug over the years for gas and petroleum of various types. Has been any impact on the water that you are aware of?

**Mr WILSON** — Not that I am aware of, no. There are a number of observation bores that have been constructed as well to monitor the water level in these aquifers. Some of those have been allowed to fail so there will have been some cross-contamination between the aquifers. That is picked up in a slightly different pressure profile. I am aware that there have been some cross-contamination issues due to bore failures.

**The CHAIR** — Water bore failures.

**Mr WILSON** — This was water bores, yes.

**The CHAIR** — But in terms of petroleum?

**Mr WILSON** — I will rephrase that. A lot of these observation bores were ex-petroleum investigation bores. They were converted from being a hole in the ground to an observation bore, so I expect that a number of them were exploration bores.

**The CHAIR** — In origin, and then used for different purposes?

**Mr WILSON** — Yes, exactly.

**The CHAIR** — I record our thanks for the information you have provided and again the secretariat may come back over the next period.

**Ms SHING** — Just to clarify, this statement that you have provided in writing is identical to what you read out; is that correct?

**Mr WILSON** — Correct.

**Ms SHING** — Thank you very much.

**The CHAIR** — Thank you, Peter.

**Witness withdrew.**