

**SUBCOMMITTEE OF THE STANDING COMMITTEE ON
PUBLIC ADMINISTRATION AND FINANCE**

WATER SERVICES INQUIRY

**TRANSCRIPT OF EVIDENCE TAKEN
AT BUNBURY
THURSDAY, 29 JULY 2004**

SESSION 5

Members

**Hon Barry House (Convenor)
Hon John Fischer
Hon Dee Margetts
Hon Norman Moore (Participating Member)
Hon Ken Travers**

[1.40 pm]

DOYLE, MR ROGER

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HON BARRY HOUSE: On behalf of the subcommittee, I would like to welcome you to the meeting. You will have signed a document entitled "Information for Witnesses". Have you read and understood that document?

Mr Doyle: Yes, I have.

Hon BARRY HOUSE: These proceedings are being recorded by Hansard. A transcript of your evidence will be provided to you. To assist the subcommittee and Hansard, please quote the full title of any document you refer to during the course of this hearing for the record. Please be aware of the microphones and try to talk into them.

I remind you that your transcript will become a matter for the public record. If for some reason you wish to make a confidential statement during today's proceedings, you should request that the evidence be taken in closed session. If the committee grants your request, any public and media in attendance will be excluded from the hearing.

Please note that until such time as the transcript of your public evidence is finalised it should not be made public. I advise you that premature publication or disclosure of public evidence may constitute a contempt of Parliament and may mean that the material published or disclosed is not subject to parliamentary privilege.

Would you like to make an opening statement to the subcommittee?

Mr Doyle: Nothing I reveal today is, I think, outside the public domain already. My interest in being here is based on the perception that I see of irrigation drainage water in this State. We have two major water-based challenges in this State: one is that we do not have enough water for the people and the other is that we have a rising salinity problem. They do not both come from the same water availability scale. Not enough water from Perth means there is a lack of water. Rising salinity problems mean there is an excess of water. We need to decide what we have.

The presentation I have put together for the committee was the presentation to the water services inquiry subcommittee, of which I believe you all have a copy. Being a pom I come from a very wet place called London. People say it is very wet but what most people do not recognise is that Perth has 40 per cent more rainfall than London. You will see on the third sheet of your notes of the graphs and tables that London has an average rainfall of 593 millimetres and Perth has an average of 865 millilitres. Most people in the State believe that we live in a very dry State. Averages tell us that we have higher evaporation than we have rainfall but that is a bit like telling people to stick one foot in a bucket of red hot coals and the other in ice because on average they will be okay. It just does not make sense. We live in a State, particularly in the south west here in Perth, that has very wet winters and very dry summers. It is the mismanagement of the water that we get that gives us the challenges in Perth and it is the mismanagement of the water we get from the rainfall that gives us our salinity challenges.

In Perth the annual rainfall supplies, which I put on the chart, total 3 695 gegalitres a year. According to Water Corporation figures, consumption is about 300 gegalitres a year, but the Water Corporation annual report says that through its stormwater drainage system it deposits

148 gegalitres water a year into the Swan River. It is saying that it uses less than 10 per cent of the rainfall that falls on Perth and it collects and discharges 50 per cent of what it actually uses. To me, in this whole water industry inquiry at national and state level, when people start looking at water availability, they look at aquifers and dams. Basically, our water availability is the rainfall. Once it gets into a dam or into ground water, it can be politicised. You can charge for it.

The challenge internationally with drainage has been that it is very easy to charge people who use water, but how do you charge for the benefits of drainage? It is all part of the same equation. It is drainage that takes water from rainfall into storage or into discharge. In this State we have basically no framework for drainage development on a political level. We have no clear legal framework for drainage development. We have no technical framework for effective drainage development because we do not need drainage once it is in store. Once it is in store we can charge for it because we know the end user. However, for the process of getting it from rainfall, which is our natural resource, through to available water, we basically have no framework to work with, either in an urban situation or in a rural situation, which is where our two main water problems arise.

Rainfall, through drainage, is a natural process. Water storage and COAG is a political process. Until the political process is in alignment with natural processes that govern water movement, we will be sitting around tables arguing for years. To address the terms of reference of the inquiry, the quality and location of water are where the rain falls and they are really good just before we get them. As for possibilities for future sources of water, if it rains more we will get more; if it does not, we will not. In terms of the quality, quantity and location of current and potential future demand, generally the water requirement is by the people; it is the concern of the people anyway. If we do not address our total water use based on natural law, there will always be challenges with it.

I did not include here some figures out of California, but I can if you wish. They reckon that the food that a single person eats during a year requires more than 1600 kilolitres of water to produce. Therefore, what the Water Corporation provides for the people in Perth is only a fraction of the water required to sustain the people in Perth. That is something that is left out of an awful lot of assessments of our water supply. A very good paper was given. I got the figures from a presentation Geoff Calder gave at the Nannup water summit.

To find the most cost-effective way to meet current and future demand, we need to focus on the drainage side of the equation. Drainage is what converts the water we have naturally available in rainfall to the water that goes into storage. It controls the quality of that water and it controls the quantity of that water. If we want to change our water balance, there needs to be much more focus on drainage and its possibilities. If we look at Perth domestic water, why not encourage people to live where the water is, as was said earlier today? If they want to live in European gardens, may be they need to go and live in Europe. Why supply top-quality water to toilets and for garden use? They do not like fluoride. Only kids' teeth need that. Why build new housing developments in areas where there is a known water shortage and then continue to allow non-sustainable consumption? Why divert clean rooftop water from houses and industrial buildings directly into polluted surface flow? If we are serious about water, we must seriously look at the drainage aspects. Drainage is not just dirty water or stormwater disposal. Drainage can collect quality water for better uses. That is basically my presentation.

Hon BARRY HOUSE: Thank you, Roger. In terms of drainage management, we have only just resolved who pays drainage rates in the south west. In effect, it has not been completely resolved yet because the maintenance of the drainage system that was put in the 1930s is still open to question, I suppose. However, the drainage rates were being levied on a very small group in the community. Do you have a comment on that situation? Does that tie in with what you are saying?

[1.50 pm]

Mr Doyle: Yes, it does. It has been an international problem. There has been a shift in drainage requirements from when most of the drainage was put in, when it was a quantity-based system, to

the environmental lobby now demanding a quantity and quality-based system. There is a publication available on the Net called "Drainage Institutions in Western Europe" that looks at the different institutional arrangements in England, France, Germany and the Netherlands, I believe, and how some of them have coped with the transition from quantity-based to a quality-based end result. It is excellent. I searched it on Google and it came through Google with that title. The other one that I found on the Net was a publication called "The Forgotten Factor: Drainage", and that looks at the challenges politically with setting parameters for effective drainage. As I said earlier, once water is in store and it is available for anybody to take out, you know who is getting it and you can monitor and charge for. However, in a drainage system, which is a natural system, it is very difficult to allocate who benefits, because everybody benefits. A farmer at the bottom of the catchment can put in a drain. He has downstream influences from that, but he also has upstream benefits. It is a very difficult situation. As I have said, we have no political framework for drainage. That is why Dee Margetts was running her program recently. Politically, where does it sit and how do you then allocate the costs of drainage to those who benefit from it? That really is the political question. In terms of the legal question, particularly out in the rural areas, a lot of lawyers will make a lot of money shortly as claims for inappropriate drainage are taken through the courts. I believe that we will see farmers lose their land and contractors lose their livelihood, but I do not know that we will ever get a resolution until we get some clearly defined legislation with regard to agricultural drainage or rural drainage. To construct a drain in a state in Canada requires 38 legally defined stages for people to get approval. They know where they stand and they know at the end that they will not get sued for it. There are farmers out in the wheatbelt digging trenches, which are not drains, because there is no technical framework within which they have to work. I believe that because of this new EPA law, down the track those farmers will lose their land because of legal claims against the pollution they have caused from unengineered drains trying to solve other people's problems. It will be an absolute bunfight and the lawyers will make a fortune, because whose water actually caused it? Was it the guy who dug the drain, or was it subsurface seepage from the guy upstream?

Hon BARRY HOUSE: I am sure there will now be a few questions.

Hon DEE MARGETTS: I have been to a range of the rural water coalition meetings and, especially during dry years, their main concern is how they will access more water from the grid, that is, the Mundaring and golden pipeline and then, as you say, we have the same situation of excess water and a lot of the time it is in the same areas. If the issue is water management, do you see a much greater role for freshwater harvesting and, in which case, how would you describe how that might be investigated? What areas might be suitable for freshwater harvesting and how might that happen?

Mr Doyle: A 1 000 hectare property in Merredin with 360 millimetres of rainfall would receive just over three and a half million cubic metres of rainfall a year. Effectively, the equation is for every millimetre of rain on a hectare, you get 10 cubic metres of water. To grow a one-tonne wheat crop you use less than a third of that. Evaporation will take probably another third. The other third - who knows? That is what is causing salinity. If you can integrate a system that collects surplus water higher up the catchment in the elevated areas as fresh, clean water, you can start doing things with it. Part of that might be to leach out the salt from the salt-affected areas, but to do so it will cost a lot of money in terms of subsurface drainage installation. However, the key is once you have set the system in motion and got rid of the salt, that part of the land is your most productive. You already have a water-harvesting situation so that you can do that. Then you can irrigate higher-value crops on that better land and take a longer-term view. Everybody wants an instant solution; it has taken years for the salt to develop and it will take long-term views to reduce that. Without taking away from the wheat production, perhaps we can harvest the excess water, put it into temporary storage, and then desalinate it and use it to grow higher-value crops on bigger areas.

Hon DEE MARGETTS: The problem, obviously, with access to the integrated system is across-the-board tariffs. Let us assume that the system is in an area that is not currently linked to the Kalgoorlie pipeline. Do you have any idea how those costs might relate to the current real costs of delivering water to, for example, a wheatbelt town?

Mr Doyle: No. I heard Fionnuala talk about having \$1.8 million to play with. Last year I was not able to pay myself a cent because drainage is not in the link, and I specialise in drainage. I did not make enough last year to cover my costs, let alone pay myself anything. I have a dream to follow and that is what I am doing. Who knows what is going to happen down the track? However, I would love to research all that, but I do not have access to it. The point is that if farmers were to collect fresh water, they could pump it into the system.

Hon DEE MARGETTS: Are you suggesting that we should look at what areas might be suitable for that sort of freshwater harvesting and better water management or right across the board?

Mr Doyle: Yes, right across the board, because I do not believe there is anywhere where we are effectively using all the water that falls. Improving water management from rainfall to storage will give us vast volumes of water because, at the moment, we are not using it.

Hon DEE MARGETTS: On the weekend I drove through a property near Lake Grace, where a farmer has brought back a farm from 40 per cent salinity using a program of specific use of saltbush and rotation and so on. His view is that is his water management program. Do you agree that basically it will be, to some extent, horses for courses as to what works in what area?

Mr Doyle: Exactly, and we do not know enough about water management or about the flow paths of water to effectively do it at this stage. I had a telephone call at seven o'clock this morning from a guy in Hyden asking me if I would design some drains for him. I will not design drains in the wheatbelt because I do not have the base information on which to base those effective designs. To effectively design a drain you need to know how much water will get into it and you need run-off coefficients for that area. England is divided into 68 different zones - what they call agroclimatic zones - each of which has its own run-off coefficients. In Western Australia it is a case of: "What is a run-off coefficient?" It has not been researched. The only thing you need to know to design a drain is how erosive is the soil that the drain is going through and what is the maximum velocity that you can allow the water to flow over the soil. That information is not available so, as an engineer, I will not go near a drainage design because down the track the lawyers will grab my back. I was asked to look at a regional drainage system at Morawa. The initial request was that I carry a \$20 million professional indemnity insurance policy. I inquired of my insurer and he said there was no way the company would give me that but if it did, it would cost \$25 000 a year until the day I die. They would not pay me \$25 000 to design the drains, let alone cover me until I die to cover the insurance they wanted. That is the challenge.

[2.00 pm]

Hon JOHN FISCHER: The picture is pretty bleak the way you paint it there.

Mr Doyle: Bleak for?

Hon JOHN FISCHER: For you if drainage is your business. We are certainly not in the next year or two going to fix some of those problems that make you concerned about putting in drains. In the meantime, of course, other people are doing it and taking the risk.

Mr Doyle: Oh, yes.

Hon JOHN FISCHER: Without being prepared to do any drainage, how would you move this water you are talking about harvesting?

Mr Doyle: You have to do drainage.

Hon JOHN FISCHER: I thought you said you were not prepared to do it.

Mr Doyle: Personally, not in the wheatbelt. In the high rainfall area we have figures from 1954 that the PWD put out for run-off coefficients for the south west.

Hon JOHN FISCHER: I thought you were talking about Merredin a while ago.

Mr Doyle: I talked about Merredin.

Hon JOHN FISCHER: You said where that excess rain is the cause of the rising salt.

Mr Doyle: I would not design a surface drainage system that takes direct run-off. I would be happy to design subsurface drainage systems where the water is collected in perforated pipes below ground. The benefit of that is that the water is much cleaner; it has gone through the soil and leached out any phosphate that is in it. It comes out clean at the other end. It is far more useable and controllable and subject to far less variability than surface drainage systems. I was asked about a surface drainage system for Hyden.

Hon DEE MARGETTS: Is that a pumping system you are talking about?

Mr Doyle: Not necessarily. Subsurface drainage systems. In 1997 I brought the first specialised subsurface drainage machine into WA. It is laser controlled and designed to install perforated pipes at a perfect grade below ground. Over 100 kilometres those drains have gone in in high rainfall areas. Tremendous results have been seen by farmers. There has been up to 100 per cent improvement in productivity according to some farmers.

Hon JOHN FISCHER: I did not mean to stop your line of thought. Where did the water from those drainage systems end up?

Mr Doyle: The ones that have gone in so far?

Hon JOHN FISCHER: Yes.

Mr Doyle: Mostly into the existing drainage infrastructure in the region. The agriculture department did a trial in Benger. It put in, I think, about 10 hectares of drainage. In the first year it removed 13 tonnes of salt a hectare from the land that people did not think were salty, although it is fed by Wellington water. Productivity was greatly increased. Other farmers, clients of mine, report huge success and are in the process of an ongoing subsurface drainage program across their properties. They all go into the existing drainage net infrastructure that was put in years ago, about which there have been fights over who should fund it and pay for this and keep it clean.

Hon JOHN FISCHER: I appreciate what you said. That surely is going back to horses for courses.

Mr Doyle: Very much so.

Hon JOHN FISCHER: In Benger you can put in subsurface drains. How can you do that in Merredin without running water into some -

Mr Doyle: If there was a perception that taking the extra water away would assist, I believe closer geological examination will show where the fresh water is. You could then intercept it before it gets into the areas where it will evaporate and cause salinity or before it mobilises salt on its journey to the valley floor. You can intercept it and have a choice about what you do with it. You can use it to mitigate the salt or use it for alternative uses - preventing the salinity problem by intercepting fresh water before it goes saline.

Hon NORMAN MOORE: You talk about drainage in a broader sense, so you have included as part of drainage the idea that the rain falling on the land goes into aquifers. Along the Perth coastal plain is a vast underground aquifer and there is also one down this way. That is a very significant natural storage system.

Mr Doyle: Huge.

Hon NORMAN MOORE: I suspect that most of the rain you talked about falling on Western Australia in fact finishes up in aquifers, which is a good place to store it. If you can tell me there is a better place to store it, I would like to know about it. The problem is when someone says we will access the water in those wonderful natural sewerage basins, we are told we cannot because the environment will be badly affected. If, on the other hand, you found some man-made way of storing that water and it did not go in the aquifer, there will be a similar environmental problem because it will not be there and it will affect the wetlands. I see where you are coming from and how we need to better use the water that is falling, but how do you collect it in a way that is not technically impossible or does not ruin the environment, as they keep telling us will happen if we extract water from the aquifer?

Mr Doyle: It is a challenge. The challenge I have is the amount that gets dumped straight out to the oceans. There was a big discussion here earlier about the allocation of water rights. I believe that if we attach water rights to rainfall it will mean that someone with a certain block of land is allowed to store on his property up to X percentage of the rainfall that fell on the area of land for which he has the water catchment rights. It is aligning the politics and the law with natural law. If someone wants more water than he has his own right to, he needs to either buy more land or lease the water right from that area so that everything comes back. When it comes down to it, farmers say they buy the land. Largely, farmers do not buy the land. They provide the productive capacity of the land that is largely based on rainfall. That is why Merredin land is much cheaper than Margaret River land. Effectively, what I am saying is that if we tie it to natural law, we need to know how much soaks in, how much runs off and give farmers a percentage that they can keep. Based on that level, everything then can fall into place. It takes the political wrangling out of the allocation process. If you want to raise a management right, then base it on rainfall and area of land held.

Hon NORMAN MOORE: I have a couple of technical questions. You are quite right when you say that stormwater drainage goes into the Swan River process and that sewage goes into the ocean - 90 gigalitres a year. How do you technically get that water back into the system without it being polluted and at a quality that people are prepared to accept? I think in London they drink it five times, do they not?

Mr Doyle: In the drought of 1974 they drunk it 10 times and there was a drop in the birth rate nine months after the drought because the oestrogen was not taken out by the purification systems.

Hon NORMAN MOORE: How do we overcome that problem? How do we manage the stormwater and encourage people to be prepared to use treated water? Secondly, you asked why top-quality water should be supplied for toilet and garden use. Are you arguing for a dual-reticulation system, which I do not have a problem with if we can afford it. Who is going to pay for it?

[2.10 pm]

Mr Doyle: Exactly. I live in Gelorup. We have no sewerage system. We have no reticulated water supply. I live off the rainfall that lands on my roof and that I can collect in my tank. I have a bore that supplies water, which I would not drink, for the garden. You asked what would I do with second-grade water. I would stick it on the garden. Let people pay for the quality water they use. It does not matter whether it is second-grade water that goes on the garden. If large sheds were going to go in a new industrial development, why not collect the clean water off the roofs the sheds, which would be clean, and put it into the water supply instead of sticking it down into an open drain so that it then goes out to the ocean and pollutes it? Why not keep it clean? They say that water will be the biggest single issue for the world in the coming years as the population grows - good, clean water. We are doing nothing to help it at the moment.

Hon NORMAN MOORE: Every rooftop that stops the water going into the aquifer and sends it somewhere else is affecting the quantity of water in the aquifer, which is the storage basin.

Mr Doyle: Yes, but the Swan River is not the storage basin and that is where a lot of it ends up. According to the water authority, 148 gigalitres of stormwater a year drains from its drains into the Swan River, not the aquifer. What I am saying is that the efficiencies we have with water use are pathetic, and we will not pick it up out of the aquifers for storage. We will pick it up by improving our management of the water between its falling and storage, and that is a drainage process.

Hon NORMAN MOORE: Most of the storage is in the aquifer.

Mr Doyle: However, it is the drainage process that gets it there.

Hon NORMAN MOORE: If you divert it from going into that storage, you are in fact reducing the amount of water going into the aquifer and using it somewhere else.

Mr Doyle: I am sorry; I did not realise I was recommending diverting it from that.

Hon NORMAN MOORE: You are putting it into storage so that it can be used, presumably. The reason for storing it is so that it can be used.

Mr Doyle: Improving the aquifer recharge may be a way around that.

Hon NORMAN MOORE: I think that is where we should get more of our water, but we are being told we cannot have it.

Mr Doyle: I do not have all the answers, but I do have some major concerns about the political leadership of our water, the legal responsibilities over our water and the lack of technical knowledge that governs our water. It is a take-take philosophy and I think we have to really take into account the natural processes that take the natural water that falls and the vast volumes of water that fall, and reduce the problems we have with it from the wheatbelt and improve the use of it in the urban centres.

Hon NORMAN MOORE: I do not disagree.

Hon KEN TRAVERS: I do not either. I fully agree with the philosophical view that you are putting. In times to come, some of your warnings about the wheatbelt will probably come home to roost. It may be that it was first put on the public record through this subcommittee. I think Norman has probably challenged some of the issues. It is the complexities of how you now apply those philosophies. You argue the point that if you did the rainfall per square metre, it makes it easy politically, but I suspect that people who have dams at the bottom of catchments and have a water licence for them may not agree with that argument.

Mr Doyle: I am happy to work through that with you because it can be done. To answer your question about the political difficulty, yes, it is incredibly difficult. That has been found internationally. The paper I mentioned, "The Forgotten Factor: Drainage", outlines most of the problems. Politically it is a very hot potato internationally. Because we have this view this is a very dry country, we will respond to the problems that we do not have enough water. I believe we have more than enough water; we just have not addressed the base drainage philosophies that need to be addressed to solve our water problems.

Hon KEN TRAVERS: I think there is a range of scientific and technical -

Mr Doyle: I do not dispute that.

Hon KEN TRAVERS: I think you acknowledged that it is quite significant when working out how much of that water you can take off.

Mr Doyle: Yes, it is huge. However, I do not think it would cost \$360 million to start to get a handle on it.

Hon KEN TRAVERS: I suspect, based on Western Australia and covering the whole of the State, it would cost far more than that.

Mr Doyle: Long term, perhaps.

Hon BARRY HOUSE: We are told that the cost factors involved in collecting the water off household roofs and roadways into stormwater drains and so on and keeping it clean is too prohibitive. Are you saying that we should be lining up those costs with the major costs like the \$350 million for opening a new source of water?

Mr Doyle: I believe so, yes. I think they need to be taken into account. If we go to the desalination issue, we will not be solving some of the other water issues. We are solving a supply issue, but we are not solving the base issues that relate to rural water sources and salinity. Those will not be addressed; we will just solve the problem with a short fix. What about the increased salinity created in the local area from the discharge from the desalination plant? Where is that salt going to go to?

Hon BARRY HOUSE: I presume straight out to sea.

Mr Doyle: So what is the problem with sticking the salinity from inland out to sea? That is another issue.

Hon BARRY HOUSE: Is there anything you want to say in conclusion?

Mr Doyle: In closing, I would like to say that I believe that the further we separate and dissociate the natural laws that govern water movement from the political will and the legal laws that govern the way we use water, the greater the long-term problems will be. The closer we get to political and legal systems that follow natural law, the less room there will be for the manipulation of those water assets and the less argument there will be from the community.

Hon DEE MARGETTS: The COAG water reforms have tried to make a kind of blunt instrument market mechanism. Aligning water management with natural laws would really take a total rethink on how we have put together -

Mr Doyle: I do not think it is worth the paper its written on, because it can be manipulated. It can too easily be manipulated by the rice growers or whomever - the political forces. If your political regulation is based on natural law, okay, rice growers can have more water than they could possibly have fall on their land, but it means that they have to have water ownership rights from other land. They have to buy vast tracts of other land so that they can have the water, but the overall system gets into balance. Okay, phase it in over a number of years to give them time to raise the capital to buy the water rights from other land.

Hon DEE MARGETTS: That is way too logical, Roger.

Mr Doyle: That is probably why I am an engineer. Engineering is basically the understanding and application of natural law to a modified environment.

Hon BARRY HOUSE: Thanks very much Roger. You have raised some really different perspectives and really interesting factors in the whole equation that the committee is looking at. Thanks very much for your time; we really appreciate it.