



COMMONWEALTH OF AUSTRALIA

# Proof Committee Hansard

## SENATE

RURAL AND REGIONAL AFFAIRS AND TRANSPORT  
REFERENCES COMMITTEE

**Reference: Rural water usage in Australia**

TUESDAY, 20 APRIL 2004

BERRI

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## SENATE

### RURAL AND REGIONAL AFFAIRS AND TRANSPORT REFERENCES COMMITTEE

Tuesday, 20 April 2004

**Members:** Senator Ridgeway (*Chair*), Senator Heffernan (*Deputy Chair*), Senators Buckland, McGauran, O'Brien and Stephens

**Participating members:** Senators Abetz, Boswell, Brown, Carr, Chapman, Colbeck, Coonan, Crossin, Eggleston, Chris Evans, Faulkner, Ferguson, Ferris, Harradine, Harris, Hutchins, Knowles, Lees, Lightfoot, Mackay, Mason, Sandy Macdonald, Murphy, Payne, Santoro, Tchen, Tierney and Watson

**Senators in attendance:** Senators Buckland, Heffernan, Ridgeway and Stephens

**Terms of reference for the inquiry:**

To inquire into and report on:

1. current rural industry based water resource usage;
2. options for optimising water resource usage for sustainable agriculture;
3. other matters of relevance that the committee may wish to inquire into and comment on that may arise during the course of the inquiry, including the findings and recommendations from other inquiries relevant to any of the issues in these terms of reference.
4. the Committee to make its report to the Senate on this matter by the last sitting day in 2003.

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**Committee met at 10.28 a.m.**

**GOODMAN, Ms Amy Joanna, Manager, Catchment Programs, River Murray Catchment Water Management Board**

**JOHNSTON, Mr Noel Mathew, Coordinator, Water Use Efficiency Project, and Irrigation Field Officer, River Murray Catchment Water Management Board**

**MELDRUM, Mr Daniel David, Senior Project Officer, Salinity and Water Use, River Murray Catchment Water Management Board**

**CHAIR**—I declare open this public hearing of the Senate Rural and Regional Affairs and Transport References Committee. The committee is inquiring into rural industry water usage. I welcome all here today, especially our witnesses. It is a public hearing and a *Hansard* transcript of the proceedings will be made. The committee has authorised the recording, broadcasting and rebroadcasting of these proceedings in accordance with the rules contained in the order of the Senate of 23 August 1990 concerning the broadcasting of committee proceedings.

Before the committee starts taking evidence, I place on record that all witnesses are protected by parliamentary privilege with respect to submissions made to the committee and any evidence given. Any act by any person which may disadvantage a witness on account of evidence given by him or her before the Senate or a Senate committee is a breach of privilege. Whilst the committee prefers to hear all evidence in public, the committee may agree to take evidence confidentially. If the committee does take evidence in a confidential manner, it may still publish or present all or part of that evidence to the Senate at a later date. The Senate also has the power to order production and/or publication of confidential evidence. The committee would consult the person whose evidence the committee is considering publishing before taking such action.

I welcome the representatives of the River Murray Catchment Water Management Board and its irrigation efficiency project. I invite you to make some short opening remarks, and then we will go to questions.

**Ms Goodman**—I will start by pointing out that the River Murray Catchment Water Management Board did not actually make a submission to this process, which I am sure you are already aware of, but we understand that you are interested in some of the work that we are doing so that is why we have come along today. I will start with a bit of history. In 1997, South Australia proclaimed the Water Resources Act, which replaced previous related acts. Water resources committees had been operating throughout South Australia for a number of years, and they advised the appropriate ministers on issues to do with water resources and the way to address those issues. Under the Water Resources Act 1997 the state government formally established new management authorities with expanded powers. These authorities are now known as catchment water management boards.

In 1997 the River Murray Catchment Water Management Board was established. Under the Water Resources Act, our board has a range of responsibilities and powers within which the board must work to further the objectives of the act. Primarily, we are responsible for developing and implementing a catchment water management plan. I have a copy here if anyone is interested. We are also responsible for developing water allocation plans for the prescribed water

resources within our area. For our board that means the River Murray prescribed watercourse area and the Angas Bremer, Noora and Mallee prescribed wells ground water areas. We are also currently working on a water allocation plan for the newly prescribed Marne-Saunders water resources areas, which are in the Eastern Mount Lofty Ranges.

As I said previously, I understand that the committee is interested in some of the initiatives to improve water use efficiency that the board has, so we will give a brief outline of the board's activities in that regard. The water allocation plan for the River Murray prescribed watercourse has established water use efficiency targets for water users. The overarching catchment water management plan also outlines that improving water use practices is a critical initiative for our catchment. To support irrigators in meeting these requirements, the catchment water management plan highlights a program of works and actions that are required to provide irrigators with the support that they need to achieve improved water use.

The project in question is being implemented as a partnership between our board, the Central Irrigation Trust, the Renmark Irrigation Trust and local action planning groups throughout the catchment. That program has been implemented in its current form for about four years. The project delivers a package of different initiatives. They start with irrigation management courses that deal with different aspects of irrigation practices. We also run irrigation scheduling demonstration sites, the installation of floating flag test wells, a comprehensive soil survey subsidy program, irrigation system evaluations, the generation and maintenance of web sites, field days and one-on-one contact with irrigators when required. That is all I have to say as an opening statement. I think we will just take questions as they come.

**Senator HEFFERNAN**—Do you have something you want to give us?

**Ms Goodman**—These are my notes. If you want them, you are more than welcome to have them.

**Senator HEFFERNAN**—Is that what you have just read out?

**Ms Goodman**—Yes.

**Senator HEFFERNAN**—There was something else.

**Ms Goodman**—I have a cover of the catchment water management plan.

**Senator HEFFERNAN**—For what—for the Murray?

**Ms Goodman**—This is for the River Murray catchment board area.

**Senator HEFFERNAN**—Tell me what it says in there about the impact of plantation forestry on the catchment.

**Ms Goodman**—It does not say a great deal.

**Senator HEFFERNAN**—It does not say anything, does it?

**Ms Goodman**—No.

**Senator HEFFERNAN**—Do you think that is an oversight.

**Ms Goodman**—No. What it does say is that it is an issue that we need to investigate. Particularly with regard to the programs for the Eastern Mount Lofty Ranges, where it may be an issue—it is not too much of an issue for the rest of the catchment—there are some plantations they are investigating as part of the water requirements.

**Senator HEFFERNAN**—I may not be across the document. Is that the river management plan for the Murray right to the head of the Murray?

**Ms Goodman**—No, it covers—

**Senator HEFFERNAN**—It is only a local—

**Ms Goodman**—It basically covers the South Australian Murray-Darling Basin area—so from the border to the lakes.

**Senator HEFFERNAN**—So that would be an incomplete document, in other words.

**Ms Goodman**—It covers our boundary.

**Senator HEFFERNAN**—What assumptions did that make?

**Ms Goodman**—Assumptions in what respect?

**Senator HEFFERNAN**—What amount of water are you playing with in that document? There has to be an overall management plan for the full length of the river. That is for the bottom end of the river. If things go drastically different at the top end of the river, that document will become redundant, because you will not have the water you are talking about.

**Ms Goodman**—True.

**Senator HEFFERNAN**—What I am trying to say is that the river management catchment plans are seriously and fundamentally flawed because they have given no consideration at all to the impact of future plantation forestry, which has the capacity to take a bloody lot of water out of the catchment. Have you raised those concerns with anyone?

**Ms Goodman**—Let me just take a step back and make it clear what we are dealing with. We are established under the South Australian Water Resources Act, so our boundary is only within South Australia and we can only deal with issues within our catchment.

**Senator HEFFERNAN**—Do you think that points to a weakness in river management—that it stops at the boundary? I think it does.

**Ms Goodman**—I suppose that is the role of the Murray-Darling Basin Commission. We deal with what we can in our catchment.

**Senator HEFFERNAN**—In your river catchment plan—the one on the table, which we would probably like to get a copy of—what assumptions are made about what water is available to you to plan to deal with?

**Ms Goodman**—For the River Murray the assumption we make is basically entitlement flow. We know that we can—

**Senator HEFFERNAN**—What have they done with your entitlement flow for the purposes of that? For instance, upriver there is a recognition that some serious reallocations will have to occur. Are those serious reallocations also to take effect in that plan there?

**Ms Goodman**—No.

**Senator HEFFERNAN**—Why is that?

**Ms Goodman**—Because this is an overarching plan to do with managing the natural resources of our catchment. If you start to talk about reallocating water then that is dealt with at two levels. One is state government policy. It is also dealt with in this other document, which is the water allocation plan for the River Murray—again, it is from the border to the barrages.

**Senator HEFFERNAN**—Is that for a defined period? What is the period?

**Ms Goodman**—Five years—till 2008.

**Senator HEFFERNAN**—You have it as a given that there will be no cutback in the amount of water that will come down the river to you?

**Ms Goodman**—That is the assumption we make, yes.

**Senator HEFFERNAN**—That is a pretty courageous assumption.

**Ms Goodman**—We have to deal with the information we have at the time. Under the Murray-Darling Basin Agreement, South Australia will get entitlement flow of 1,850 gigalitres a year across the border. Obviously, some analysis is done on the median flows that we get, which are a little bit above that—although in the last couple of years they have not been. So we had to work on the best information we had at the time of publishing this, which was that under the act we would get entitlement flow and that is what we would be dealing with.

**Senator HEFFERNAN**—In the last few years, for instance, there has been some serious allocation retrieval in New South Wales or in Victoria. You have had none.

**Ms Goodman**—We had water restrictions this year. It depends what you mean by water retrieval. We did not take back water from people.

**Senator HEFFERNAN**—How much of a perceived allocation could a South Australian farmer use?

**Ms Goodman**—In the 2003-04 water use year it started off being cut back to 65 per cent of allocation, but as the water outlook improved it went back to 95 per cent.

**Mr Meldrum**—I will just say something in relation to your initial question about farm forestry and that sort of thing. Where it potentially is an issue for us on the eastern side of the Mount Lofty Ranges, the water allocation plans that have been developed for those areas will look to dealing with potentially how much water use farm forestry could extract out of the—

**Senator HEFFERNAN**—I am not familiar with this area.

**Mr Meldrum**—I guess our looking at that for the Eastern Mount Lofty Ranges, which is potentially—

**Senator HEFFERNAN**—Where are they?

**Mr Meldrum**—Between Adelaide and the catchment.

**Senator HEFFERNAN**—Do you have any idea of what contribution those ranges make to the river system?

**Mr Meldrum**—It is a very small proportion in relation to the 1,850 gigalitres that flows across the border. What I am getting at is that, in trying to make some provision for farm forestry within those water allocation plans, we would probably seek to have a similar sort of action taken by catchment authorities in the other states so that if they are allocating water they need to make some sort of provision as well.

**Senator HEFFERNAN**—But do you anticipate in that river management plan that if there were a big growth in the plantations you would have to allocate water licences to them?

**Mr Meldrum**—In developing the water allocation plan for the Marne-Saunders catchment, which is a subcatchment of the Murray River catchment area that is dealt with under that plan, we would be looking at estimating the potential water use of land that could be devoted to farm forestry.

**Senator HEFFERNAN**—What is the rainfall in that country?

**Mr Meldrum**—It varies. It is fairly low. I would not be able to give you an accurate answer here.

**Senator BUCKLAND**—I have a few questions about the water flow-down. I have a real interest in this because I bathe in the stuff that comes out of the river at Whyalla. What percentage of the water from the catchment that we have in South Australia—the water from our own catchment areas this side of the border—goes into the river? Did you talk about 1,050 gigalitres?

**Ms Goodman**—It is 1,850.

**Senator BUCKLAND**—There are 1,850 gegalitres coming over the border. What comes from our own catchment areas into the river?

**Ms Goodman**—Unlike the other states, we do not have tributaries that flow into the river, with the exception of the ones in the Eastern Mount Lofty Ranges. The only tributary we have that flows into the river itself is the Marne. The rest flow into the lakes. That all occurs before the Whyalla off-take.

**Senator BUCKLAND**—I am not worried about where it comes in.

**Ms Goodman**—Those flows come in at the lower end of the river. I cannot say specifically how much water they contribute. That information is available; I just do not have it. Looking at other flows, rainfall and natural ground water would be the only major sources of water going into the river in South Australia; so obviously we rely heavily on the water coming from upstream.

**Senator BUCKLAND**—Could you take it on notice to provide for us what you can in relation to that?

**Ms Goodman**—The volume of water flow from the Eastern Mount Lofty tributaries?

**Senator BUCKLAND**—Yes.

**Ms Goodman**—No worries; I can do that.

**Senator BUCKLAND**—That would be helpful. Is the water that is taken out of the river in South Australia, particularly around the fruit-growing areas, metered? Are the individual blocks metered?

**Ms Goodman**—For all of the water that comes out of the River Murray, yes, irrigation extractions are metered. There are some exceptions around the Lower Murray reclaimed areas. That water is not metered currently but it will be as part of the rehabilitation program. Within the prescribed wells areas, which are ground water areas, they are all metered as well, although some are only halfway through the process of metering. But most of the water extractions in our area are metered.

**Mr Meldrum**—The vast majority of fruit-growing blocks would be metered—a high percentage.

**Senator HEFFERNAN**—Why would there be some that are not?

**Mr Meldrum**—I am not sure whether any fruit-growing blocks are unmetered.

**Ms Goodman**—Not fruit growing.

**Mr Meldrum**—I am not sure whether there are any down at the bottom end, but through the Riverland everything is metered. The unmetered irrigation that we have is the pasture in the Lower Murray swamps, the dairy areas. They are all being converted over to metered sluices or metered inlets.

**Senator HEFFERNAN**—Can you trade a water licence from those unmetered areas into a metered area?

**Mr Meldrum**—Yes, you can trade an allocation or a proportion of an allocation.

**Senator HEFFERNAN**—If it is not metered, how do you know what the hell you are trading?

**Mr Meldrum**—They have a fixed allocation, and you assume in essence that they do not use over and above their allocation.

**Senator HEFFERNAN**—They might be using three times that and you would not know.

**Mr Meldrum**—They may well be using three times, so that is why we are metering.

**Senator HEFFERNAN**—It sounds like a dopey system.

**Senator BUCKLAND**—What is the time line for the program to meter all water? Has that been set by the state government?

**Ms Goodman**—I believe it has. A part of the state water plan was that all water extraction should be metered. I think the date on that is 2005, but I am not 100 per cent sure of that. There are some areas, in particular the Lower Murray reclaimed areas, where the metering process, as I said, is tied up with the rehabilitation of those irrigation systems. That will take a little bit longer, so I think their time frame is about 2007.

**Senator HEFFERNAN**—Do they pay for their water?

**Ms Goodman**—Yes.

**Senator HEFFERNAN**—How do you they pay for it if it is not metered?

**Ms Goodman**—They pay for it on allocation, not usage, I believe. I am not 100 per cent sure of that.

**Senator HEFFERNAN**—If there are no meters, you would not know if they were using three times the amount. They pay for what is on the bit of paper, not on what goes through the pump.

**Ms Goodman**—That is right.

**Senator BUCKLAND**—Prior to Christmas, there was some debate about the water being piped to the Clare Valley. Where is that at the moment? How much water, if any, is going across to the Clare Valley?

**Ms Goodman**—The water that is piped to the Clare and to other areas such as the Barossa is actually outside of what the board does. Those arrangements are made between the state government, SA Water and the Department of Water, Land and Biodiversity Conservation. It is outside of what we do, so I cannot really answer—unless anyone else knows—exactly where that is up to.

**Senator BUCKLAND**—But at some point that would have to be monitored and metered. Where is that done and who does it?

**Ms Goodman**—That is done through the Department of Water, Land and Biodiversity Conservation.

**Senator BUCKLAND**—And you do not know where it is at at the moment?

**Ms Goodman**—No.

**Senator BUCKLAND**—Does your group, the management board, monitor water quality as it comes over the border? And does it monitor the water quality at stages through the flow in South Australia?

**Ms Goodman**—The Department of Water, Land and Biodiversity Conservation have water-quality meters along the river. So they are the ones that take the regular readings of the water quality, particularly of salinity. That is the big issue for our end of the river. They take all of those readings. Obviously we have access to that information, but they are the ones that are actually doing the work.

**Senator BUCKLAND**—Do all of the different departments managing water in South Australia get together at some point in time each year—monthly, weekly, biannually—to see whether they have common purposes?

**Ms Goodman**—That is a very broad question.

**Senator BUCKLAND**—It is. Who do you meet with and how often?

**Ms Goodman**—We as staff of the board meet very often with staff from the department of land and water conservation because we work on similar projects. Sometimes we meet with them daily on different issues. Interactions between the board and the department happen more in a monthly to quarterly time frame.

**Senator BUCKLAND**—What sorts of things are discussed there?

**Ms Goodman**—Most of what is discussed there is the interaction between the board and the department on implementing the catchment plan, because there are obviously cross-interests in what we do as we are all working in the same area, trying to achieve the same thing. Those meetings are more about the roles and responsibilities of the different organisations, to make sure that there is no duplication of effort, whereas the staff tend to work day to day on actual projects, to make sure that those on-ground works are happening.

**Senator BUCKLAND**—The tradability of water has already been raised with you. Does the board have any input at all to the question of the sale of water upstream—that is, over the other side of the border or borders? Also, what role do you play if someone wants to trade their water allocation or their water entitlement?

**Ms Goodman**—Principally, the board's role in the water trading transfer is in the preparation of the water allocation plans. The board is responsible for developing water allocation plans, and those plans set out the rules by which water will be allocated and transferred, so the board plays a major role in that function. The Department of Water, Land and Biodiversity Conservation actually implement the rules, because they are the organisation that manage the licensing system. So the ultimate decision on whether water gets transferred wherever—whether it is within the state or to other states—is the responsibility of the Department of Water, Land and Biodiversity Conservation and the minister. The board is sometimes asked to comment on those things, but generally we do not have much input to that.

**Senator HEFFERNAN**—Has water been traded upstream—into Barooga or somewhere?

**Ms Goodman**—Yes.

**Senator HEFFERNAN**—Do you ever think of the long-term consequences of that?

**Ms Goodman**—That is part of the purpose of the water allocation plan. There are three fundamental things that need to be considered in developing the plan. One is the capacity of the resource to have water extracted from it; another is the effect that extraction has on the users of the resource—that is, the irrigators and the urban community; and then there is the effect that that has on the ecosystems that rely on the resource. So in developing the plan we need to consider those three things in setting the rules by which we will transfer. So the simple answer to your question is yes, we do consider that.

**Senator HEFFERNAN**—Can you trade water with a piece of paper in South Australia?

**Ms Goodman**—Yes.

**Senator HEFFERNAN**—Don't you see some danger there, in that if I am 'Swires Hong Kong Pty Ltd' and I decide that I can buy 500 gigalitres of your water and take it upstream, I can actually ruin the system here with a paper trade? Don't you see the danger in a paper trade? In other words, banks, investment institutions and financial groups can actually own the water and trade the water. The only way they make a profit is the capital growth and the margin they screw out of the user. You are quite happy with that?

**Ms Goodman**—I am not sure that I can comment on that. I understand the issue that you are raising. That has originated from the separation of water rights and property rights, and that is obviously an issue—

**Senator HEFFERNAN**—But a nonuser can own the water.

**Ms Goodman**—That is right, because it does not have to be tied to land.

**Senator HEFFERNAN**—Can I congratulate the South Australian government on your craziness. That is lunacy.

**Ms Goodman**—That is an initiative of COAG, not the South Australian government.

**Senator HEFFERNAN**—You are the only one so far that can do it.

**Senator BUCKLAND**—Just following on directly from that: if I were a blocky and had a fruit orchard, that would mean that I could sell my water separately. If I were selling up I could sell the water separately from the land, so you would not buy the land and the water as one package.

**Ms Goodman**—You do not have to, no.

**Mr Meldrum**—If someone were selling a fruit block as a going concern, though, I am sure that the person buying that fruit block would be looking for some sort of access to the water, unless they already had a water allocation tied up themselves. In answer to your point a little bit, Senator Heffernan, there is not that much free water on the market, so at the moment I do not think trade is a huge concern. A lot of water has been traded from the Lower Murray reclaimed areas upriver, but one of the additional things that we would look at is that the salinity impacts of using the water upriver may in fact be a lot less than those of using that water within fruit irrigation—

**Senator HEFFERNAN**—What is the contribution to the salinity? First, what is the contribution of the ground water to the flow of the river in South Australia?

**Mr Meldrum**—I cannot answer that one accurately.

**Senator HEFFERNAN**—Just give us a rough stab.

**Mr Meldrum**—I could not give you a rough stab.

**Senator HEFFERNAN**—Does that document point it out?

**Ms Goodman**—I do not think so. There is probably modelling around. I believe you have the Centre for Groundwater Studies later on in your agenda. They may be able to answer that question a lot better than we can.

**Senator BUCKLAND**—Has the board ever been asked to make or of its own initiative has it made submissions to the government? I agree with Senator Heffernan that it is lunacy to think that you can sell your water upstream. Has the board ever made submissions to try to have some impact on the government's thinking process? You are right—it is a COAG decision. But it is happening here, so has the board ever tried to do something about that?

**Ms Goodman**—No, I do not believe they have and I believe that that is mostly because at this point they do not consider it a major issue.

**Senator BUCKLAND**—That frightens me, quite frankly.

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**Ms Goodman**—I was about to say that we have been able to trade water in the very way that you are discussing for a number of years now. The analysis of that information, which I do not have with me but I can get for you—

**Senator BUCKLAND**—Yes, I ask you to produce it.

**Ms Goodman**—is that being able to transfer wherever you can has not resulted in a mass exodus of water from South Australia. In some years it has actually resulted in quite an increase in water into South Australia. On average, as Dan pointed out, there are not huge amounts of water to transfer anyway. It is not causing significant movement of water.

**Senator HEFFERNAN**—One of the great difficulties of that issue is that you are actually transferring potential capital wealth to a non-user—and it is the user who, under your charter, has to become more efficient. So you are taking away his means to wealth creation to create those efficiencies if you allow some sleazy person from Hong Kong or Timbuktu to be the water bank. It is a great and serious difficulty. Going to the orange block that Senator Buckland referred to: the bank says to the orange bloke, ‘Oh, gee mate, things are tough; we’re going to have to call the loan in.’ The easiest thing that the bank can trade is the water. So they get rid of the water and leave the poor old grower—Senator Buckland—there with an orange grove and no water. That is the destructive capacity of it. Once you do that in a confined area then you break down the viability of the infrastructure. It just blows me away that the South Australian government would allow a bunch of carpetbaggers to own the water—potentially.

**Ms Goodman**—These are issues that perhaps you need to raise with the South Australian government because it is largely outside the scope of what the board does. As I said, I can get you some information about water transferring statistics, both interstate and out of state. The other thing I would point out is that irrigators within our catchment have the ability to transfer water permanently but they also have the ability to transfer water temporarily, which is the majority of trade. That means that, in the case that Senator Heffernan raised, if someone wanted some extra cash to expand their property they could sell water temporarily and get money for that water but it actually returns to them at the end of that transferred period. So they would not be giving away that water permanently to someone that has no interest in our catchment. It is up to the irrigator who has the rights to that water to make that decision. They do not have to transfer water to anyone if they do not want to.

**CHAIR**—Whilst there is that potential as described by Senator Heffernan, are you saying that in practice it is mostly intra trading that is occurring and that most of what is available for trading at the moment is more as a result of raising capital in order to do other things in agricultural activity?

**Ms Goodman**—I believe so. As I said, I can get statistics for you to clarify that point. But certainly the analysis of the information so far is that, while in theory you could transfer all the water out of the River Murray to someone sitting in Hong Kong, in practice it is unlikely that that would ever happen.

**Senator HEFFERNAN**—You are not pressing Hong Kong; it could be someone sitting in Adelaide?

**Ms Goodman**—Yes. I am just taking up your example.

**CHAIR**—Is that regulated at all? Is there some government authority that looks at the issue of water trade or is it just dealt with in an open market?

**Ms Goodman**—The administration of the transferring market is done through the Department of Water, Land and Biodiversity Conservation.

**CHAIR**—So if someone in Adelaide decided to buy up all the water rights then there would be some way of checking, monitoring and giving final approval, as opposed to a laissez-faire approach?

**Ms Goodman**—That is right.

**Senator HEFFERNAN**—What is that process? I note that the South Australian government have not bothered to put in a submission to this inquiry, so we do not know what their thinking is.

**Ms Goodman**—I do not either. The process for administering water allocations and transfer processes for the prescribed River Murray watercourse is done through the Berri office of the Department of Water, Land and Biodiversity Conservation.

**Senator HEFFERNAN**—Has there ever been a knock-back?

**Ms Goodman**—I am not sure that I can answer that question. I think there has, but I cannot answer that definitely.

**Senator HEFFERNAN**—Do you understand the difficulty, though, if you were an orange grower struggling on a farm and the bank said, ‘We’re going to buy your water’—one of the new capital investment areas in Australia is going to be water because of its increasing capital value—and that orange grower would then have to operate on what is called a ‘spot water market’. We have already had instances in New South Wales of people who, because they are users, have this dual capacity to own 100,000 megalitres of water if they want to, will actually withhold the water until the market heats up and then they will sell it. In other words, there is potentially a capacity to manipulate the water market.

**Mr Meldrum**—There is a danger that those people who are speculating will impact adversely on the small operators, but you would hope that over the whole trade market what you will in effect be getting is water directed to the most efficient users.

**Senator HEFFERNAN**—The highest users. But you must understand that one of the furphies, one of the snow jobs they—that is, the people who want to get into this market—try on you is the suggestion: ‘Some years, there’ll be too much water and the trade will be bugger all.’ In effect, what they are after is the capital growth—the capital base—of the value of the water.

**Senator BUCKLAND**—One final question: has there ever been any public consultation, particularly with the landowners here, about water use and tradability?

**Ms Goodman**—The development of the water allocation plan, which outlines the responsibility of the board, and the consultation process that goes with that is outlined in great detail in the Water Resources Act. We have quite a prescriptive process that we have to go through to ensure that everyone—irrigators, urban users and the general public—has the opportunity to comment on the way water is allocated and traded in South Australia. The River Murray water allocation plan involved a process over a few years, with a number of public meetings, in total around 10.

**Senator BUCKLAND**—Ten over a number of years?

**Ms Goodman**—It was over a number of years; that is true. For each of those there was a period during which irrigators could make written submissions. When I said ‘a number of years,’ it was probably two or three.

**Senator BUCKLAND**—Does that document—which I think you are going to give us—list the number of attendees and the number of submissions?

**Ms Goodman**—This one doesn’t, but there is a report that does outline that, if people are interested.

**Senator BUCKLAND**—Will you provide that to us.

**Ms Goodman**—Yes.

**Senator BUCKLAND**—I am surprised in that I do not think that 10 over a number of years is a comprehensive process, is it?

**Ms Goodman**—If you look at 10 over a number of years, you will see it probably is not. But we also have to work within our community, which is overconsulted regarding both documents that we consult on and a number of different natural resource management issues, let alone all the other issues that it is consulted on. While the act prescribes that we must run public meetings, which we do, we also have a number of other ways to try to engage the community, and that is more through giving information to the irrigators through projects, such as the one that Noel runs. He can have one-on-one conversations with the irrigators to make sure that they are aware of these things and have the opportunity to make submissions. If you look at 10 public meetings over a number of years in isolation it might look a bit scant, but it is actually a very detailed process.

**Senator HEFFERNAN**—Can you provide us with the details of some of the significant efficiencies you have created?

**Ms Goodman**—Efficiencies in which sense?

**Senator HEFFERNAN**—Well, that’s your job, isn’t it?

**Ms Goodman**—For the project?

**Senator HEFFERNAN**—Yes, so how water is much better used these days, water usage and efficiency in crops or whatever it is that you do. You do not just go to meetings. I presume you get outcomes.

**Ms Goodman**—That is true.

**Senator HEFFERNAN**—Could you provide us with some examples of efficiencies? We used to use 100 megalitres to do this; now we use only 50, that sort of thing.

**Ms Goodman**—Do you want to answer that question, Dan?

**Mr Meldrum**—We can certainly provide—

**Senator HEFFERNAN**—That is your job, isn't it?

**Mr Meldrum**—Yes, it is. Over the last couple of years we have had this onground water use efficiency project that Noel has been running that has been putting in place the capacity for irrigators to improve their water use efficiency. Over the last year, we have been working with the Department of Water, Land and Biodiversity Conservation to come up with a standardised and consistent method for actually monitoring and reporting that water usage efficiency.

**Senator HEFFERNAN**—So you do not have any idea what improvements you have made?

**Mr Meldrum**—We do have some idea, yes. There will be statistics—

**Senator HEFFERNAN**—If you do not have a monitoring system, how do you arrive at what you have done?

**Mr Meldrum**—There is a monitoring system that was used for the first time last year.

**Senator HEFFERNAN**—Yes, but how many years have you been going?

**Mr Meldrum**—On this project itself—

**Mr Johnston**—Four years for this particular project.

**Senator HEFFERNAN**—Did you do any benchmarking when you started?

**Mr Johnston**—This project started just to get the awareness happening that the project was available. There was education and training available for irrigators—

**Senator HEFFERNAN**—Give us an example of something you have done. I am an old, broken-down cocky who is living in the past. What do you do with me? I have channels. You come out to my place and I say, 'Help.' What do you tell me?

**Mr Johnston**—We offer irrigation management courses as a first step, which are normally presented by Primary Industries. It basically teaches irrigators the first step about soils and

systems so you can start getting some idea of how much water to apply to your crop and soils. That was a really big void. Irrigators have been renowned for irrigating like their granddaddy did 50 years ago, so we are trying to swing people around with modern technology, knowing what their systems put out and what their crops need. That was a big first step. It has taken a couple of years for people to get to know that that is available and that we are onground and available. One of the outcomes of the project is that we have put 1,500 irrigators through irrigation management courses in three years. That was a huge onground effort.

**Senator HEFFERNAN**—Do you try to get a couple of model farms where you can take other people to say, ‘This, son, is how you should be doing it’?

**Mr Johnston**—We do. We have soil moisture monitoring trial sites on individual growers’ properties. We have put different monitoring equipment on there. In the Lower Murray in particular, because there was a huge lack of soil moisture monitoring knowledge down that way, we have taken busloads of growers out to these properties and shown them the results from growers using all different types of equipment.

**Senator HEFFERNAN**—What would be an example of one of the most spectacular changes that you have brought about in farmers’ thinking?

**Mr Johnston**—Basically changing their irrigation practices, as in timing and amount applied. Everyone tends to apply far too much water in each irrigation event and, over the last three years, we have turned that around significantly to basically water more often and a lot less, filling and emptying the root zone, hence not putting all that water into drainage.

**Senator HEFFERNAN**—Senator Buckland mentioned the Clare Valley earlier. I understand there may be a future problem there with the aquifer becoming more saline. Is that the reason we are piping water over there?

**Mr Johnston**—I am not fully up with the process there, but I think it is only for supplementary irrigation.

**Senator HEFFERNAN**—My understanding is that some of the bigger set-ups over there waste a lot of water compared to—

**Ms Goodman**—Can I just point out that this project does not actually work within the Clare area.

**Senator HEFFERNAN**—Do you have coordination between catchments?

**Ms Goodman**—We do have coordination between catchment groups.

**Senator HEFFERNAN**—You have coordination with that area there? It is your water.

**Ms Goodman**—Through the boards, yes. Noel does not have too much to do with their area because they are such different catchments.

**Senator HEFFERNAN**—Do they have some sort of a water management board?

**Ms Goodman**—Yes, they do. They have a catchment water management board.

**Senator HEFFERNAN**—Given that they are taking water out of the Murray system over to a different catchment, I take it, does someone say: ‘Hang on. We’d better just look at how efficiently they’re going to use that water’?

**Ms Goodman**—Yes. Because they are pumping water from the River Murray to the Clare they are subject to the rules of the River Murray water allocation plan, which say that they need to be efficient, that they cannot have an adverse impact on the existing ground water system—and that goes to the salinity issue you were talking about—and that they cannot have an impact on the users or the ecosystems of the river.

**Senator HEFFERNAN**—Wouldn’t it be in your interest on behalf of your growers or your water users to know most definitely what the outcome is over there? How do you know that they are not just wasting? I am not saying they are.

**Ms Goodman**—We are assuming that the policies in the water allocation plan are there to protect both the resource of our River Murray and their resource. If they are adhering to the policies in there—

**Senator HEFFERNAN**—But if—

**Ms Goodman**—We are auditing that through the department. This plan has been around for only one year.

**Senator HEFFERNAN**—You know for sure they are being as efficiency conscious as you are?

**Ms Goodman**—No, because this plan has been in place for only one year. As Dan said, we have only just put in place the first year of monitoring of that, from which we have not got the results, so at this point we cannot comment. If the results come back and show that they are not being efficient then obviously we will need to do something about that.

**Senator STEPHENS**—On that point: do you believe that your board has enough teeth or do you think there needs to be a regulatory role?

**Ms Goodman**—The board do have some regulatory role. Under the Water Resources Act we do have reasonable teeth, if you want to put it that way. One of the issues we have is that, while we write the policy for water allocation plans and the like, that has to be administered through the department because it has to be administered through the licensing system. That does cause some confusion or uncertainty about the roles and responsibilities of regulation. The board take the position that it is the responsibility of the department to do that. Our role in that is to provide an auditing role to make sure that that is happening. For the first time this year we will be auditing the process and making sure that it is happening so that the board can be comfortable that their plans and their policies are being adhered to. It is probably not so much for me to comment on that because I am only employed by the board—and the board themselves should be commenting on that—but I do not think lack of teeth is a major problem for our board.

**Senator STEPHENS**—Going back to the issue you raised before about trading and the concerns that Senators Heffernan and Buckland raised about the issue of trading in and out of the catchment and in and out of the state, has there been any noticeable change in water trading patterns since you started to collect the data?

**Ms Goodman**—As I said, I do not have the statistics with me so I cannot answer that definitively but I will get that information. I think there has been some change over the last few years. To start with, it is my understanding that there was a reasonable amount of trade into South Australia but that in the last couple of years with water restrictions and drought issues there has been some trade out of the state. It really does flow depending on the demand of the time. I can get you those statistics with some analysis to help you in that.

**Senator HEFFERNAN**—Were Elders or someone going to have a big auction that got cancelled?

**Ms Goodman**—I am not 100 per cent sure. There were some big auctions at the beginning of the water use year.

**Senator HEFFERNAN**—Are these high-security waters that are allowed to be traded back up the river?

**Ms Goodman**—Yes. All of the water in South Australia is high security.

**Senator HEFFERNAN**—Do you think that is fair?

**Ms Goodman**—I am not going to comment on that. That is an issue for the state government.

**Senator HEFFERNAN**—We ought to be talking to the board. Are the board of government just like area health boards in New South Wales—government appointments—or are they locally elected?

**Ms Goodman**—The board is appointed through a process of nominations.

**Senator HEFFERNAN**—I do not want to get you the sack, by the way.

**Ms Goodman**—That is okay; I do not mind. The board is appointed through nominations that are signed off by the minister and the governor.

**Senator STEPHENS**—Is the board representative of different interest groups, stakeholders?

**Ms Goodman**—They are appointed on a skills basis, so they do not represent any organisation in particular; they are there because they have a particular skill that they can bring to the board.

**Senator HEFFERNAN**—Not because they have political friends?

**CHAIR**—That is established by the act?

**Ms Goodman**—Yes.

**CHAIR**—What sorts of skills are you talking about? Are you talking about a balance between social outcomes, environmental outcomes and industry outcomes?

**Ms Goodman**—That is right. The act prescribes how the boards will be appointed and what their function is. The issues you just raised are taken into account when those appointments are made. But I am only an employee of the board; I have nothing to do with that process. If you needed more information on that you would probably seek it from the minister's office.

**CHAIR**—Senator Stephens raised the question of trading. In relation to the water trading system that currently operates in South Australia do you think that, if there is the potential for a disaster to occur in the way Senator Heffernan described it, there might be a need for a regulator to be put in place—that is, create a new position or authority or something that deals with potentialities?

**Ms Goodman**—We are not really in a position to comment on that, because that was not what we came here today to talk to you about. That is something the board and the state government would need to consider.

**Senator HEFFERNAN**—We do not want to put you on the spot. We would like the board and the government to come and talk to us, given that there was an early report from another committee looking at water which made some strange noises the other day which I thought were all premature noises about the viability and health of the river. I would have thought that this was an excellent forum in which your board and the government could put a case, but they have been silent. They are not interested thus far in talking to us. Anyhow, do not say a word; that is my view.

**Senator BUCKLAND**—Mr Meldrum, we were talking earlier about metering and those that are not metered. I guess we are taking those that are not metered on trust to only take out what they say they do, but they must know what they are taking out from their pump capacity and hours and things like that. What are the penalties if they take too much, and how do you know? Have there been any prosecutions?

**Mr Meldrum**—Again, those sorts of issues—compliance against how water licences are used—are dealt with through the Department of Water, Land and Biodiversity Conservation. I think the majority of the irrigators in these reclaimed areas in the Lower Murray do recognise that they are potentially using water over and above their allocations. That is one of the indications we have got from the preliminary results of the first round of monitoring their water efficiency. It is obvious that there are some areas where the total area of irrigated crops means that, if you need to water that much crop, you need more than your allocation says you can have. So there will need to be some more detailed investigation of that in the future.

**Senator BUCKLAND**—Have there ever been any prosecutions associated with this?

**Mr Meldrum**—Not to my knowledge, but I could be wrong.

**Senator HEFFERNAN**—So potentially they might be taking out water that should be going on to do some good work further down the river?

**Mr Meldrum**—There is that potential, yes.

**Senator HEFFERNAN**—Do not feel bad about it because no-one really knows what Cubbie Station uses in the Lower Balonne either, but we intend to make sure that they do. Finally, could you provide us with a case study of a model somewhere? You are the water management board irrigation efficiency project. Is there a case study you could provide to the committee of which you could say, ‘That’s a wonderful model’?

**Mr Meldrum**—We have just initiated two case studies for groups of irrigators, rather than individuals, where we are trying to get some sort of peer involvement in encouraging other members of a district to lift their performance.

**Senator HEFFERNAN**—That would be good. I agree entirely. That is how it works. You get someone to do it and then they all look over the fence.

**Mr Meldrum**—That is right. We have one of those case studies in the Bookpurnong Lock 4 area where a salt interception scheme is being put in at the moment. There is another case study that we have just initiated at Pike River, which is another high salinity area. When we have some concrete results for water use efficiency gains in those areas we will be happy to provide them.

**Senator HEFFERNAN**—Thank you. Congratulations on your work.

**CHAIR**—We will conclude there. I thank you for appearing here today and providing assistance to the committee. On behalf of the committee, I thank you all for providing information. There were four issues where you agreed to provide further information. The secretariat will be in touch about that. Thank you again.

[11.24 a.m.]

**STARICK, Mrs Sharon Ruth, Deputy Chair, Natural Resources Committee, South Australian Farmers Federation**

**CHAIR**—Welcome. I invite you to make a short opening statement before the committee proceeds to questions.

**Mrs Starick**—As part of my presentation I will explain where the South Australian Farmers Federation is coming from and some of the measures we seek for water use in the future in Australia. We believe that water management in Australia must ensure the following measures. We strongly support environmental flows, but there has to be some emphasis on where the water will actually come from, which users the water will be taken from—whether it be irrigators or metropolitan users—and how those individuals will be compensated. We also believe that the real value of water used in primary production is used to assess an industry's viability and that potable supplies are of suitable quality and quantity. To achieve these things, we believe the COAG 1994 outcomes need to be delivered and water pricing needs to reflect its true value—both domestic and through agricultural or industry use. Why is it that, as a community, we will pay substantially more to buy bottled water than for tap-water?

**Senator BUCKLAND**—Or milk.

**Mrs Starick**—Or milk, absolutely. We need to make sure that everybody pays an equitable amount for potable water. We also need to ensure the transferability and tradability of water allocations, and that the process used is transparent and equitable so that no industry is pointed at or set aside. We need to have genuine cross-border outcomes rather than, as we have seen in the past, finger pointing across state borders. I do not think that is very conducive to solving any problems, particularly in the Murray-Darling Basin. We need to ensure more emphasis on best practice. In saying that, we also need to be a bit cautious because by using more water we could be creating a worse environment by allowing less water to flow back into the river.

There needs to be a change in the metropolitan community to encourage people to see water as a valuable and finite resource. We need to have better user campaigns targeted at the domestic user community such as drought proofing Adelaide. There is a River Murray levy in South Australia and a Waterproofing Adelaide committee, which I sit on. The committee's greatest emphasis is to make the domestic community realise how much water they are using and how to go about saving that water. We need to have adequate financial resources for change information, so we need to be able to finance communication and information to work towards best use practices. It is no good saying people should be changing practices if they are not sure what practices they should be moving towards or why they should be moving towards them.

We also need better monitoring and evaluation of ground water resources but, once again, it boils down to the amount of money allocated to monitoring of those resources compared with actual spending on ground works. We also need property rights, which would be used to encourage change, and the provision of facilities to track change. It is no good saying people

need to change if we do not monitor when people change and how much they have actually changed.

There needs to be a whole-of-community approach to fixing water related problems rather than selective finger pointing, which I think has gone on in the past, particularly in South Australia where the finger seems to get pointed quite often at the cotton or rice industry—obviously, that occurs in other states. If we are going to tackle this problem properly we, as a community, need to be working together.

**Senator STEPHENS**—Thank you very much, Mrs Starick. I note that your comments there very much reflect the submission that the South Australian Farmers Federation made to the House of Representatives Standing Committee on Agriculture, Fisheries and Forestry in 2002. Can you make any comment about what has changed since that time and whether or not you are seeing any improvements in the issues that you raised then in the current situation?

**Mrs Starick**—Take the better use campaigns for domestic users and the metropolitan community. In South Australia at least we now have a committee, called Waterproofing Adelaide, which is looking at a range of strategies to ensure that Adelaide is better utilising their water supplies. It is also looking at alternative water supplies—things like stormwater management and waste water management—and how to recycle those other resources that are currently there, rather than just saying, ‘Let’s extract more water from the River Murray.’ It is also looking at education campaigns for the metropolitan community. So I see some of those sorts of things happening. I also see that there has been a shift, particularly in the Murray-Darling Basin, towards the state governments and the Australian government working together a lot more than maybe they did in the past—say, five years ago. I see that as something that is quite positive.

**Senator HEFFERNAN**—I just take up your point on Adelaide efficiency. I presume that South Australian Farmers are aware of these figures: from 1983 to 1996 the population of Adelaide grew by 10 per cent.

**Mrs Starick**—Yes.

**Senator HEFFERNAN**—Its water usage increased by 17 per cent, whereas—I will take two others—Canberra’s population grew by 20 per cent and its water usage decreased by 25 per cent, and Sydney’s population grew by 16 per cent and its water usage also decreased, by two per cent. So there is a strong message about urban efficiency.

**Mrs Starick**—Absolutely. I think a lot of the growth that has happened in metropolitan Adelaide in the past has been suburban growth, so it has not been high-density housing, which has quite substantially lower water use than lower density housing. So I think in Adelaide there has been a push more towards high-density housing, but also there is now a bit of a shift in government policy. For instance, new housing developments need to have rainwater tanks installed—simple measures like that, which have not been in place in the past. So I can see that Adelaide can continue to grow, but if we implement some of those measures we will be doing some things to reduce our water use.

**Senator HEFFERNAN**—The average house uses more in the toilet and the shower than it does in the garden.

**Mrs Starick**—Yes, I think the garden uses about 40 per cent, whereas the rest of the household uses 60 per cent. I think, too, we are finding that things like showers, washing machines and toilets are becoming more water use efficient, so we should be able to reduce our water use.

**Senator STEPHENS**—Just to go back to your submission again, Mrs Starick, one of the issues you raised—and this was part of the evidence that we heard from the previous witnesses—was the transferability and tradability of water allocations. Can you tell me what the South Australian Farmers Federation position is on that?

**Mrs Starick**—I think, just by looking at the way that some of the other states currently operate, that in South Australia we have quite good water rights. When people are issued with a water licence they are able to trade that water licence.

**Senator STEPHENS**—Sorry, you misunderstand. My question is: what is your organisation's position on the issue of tradability and transferability of water licences and water allocations?

**Mrs Starick**—As long as the process is quite clear, I do not think our organisation has any issues with tradability or water allocations. I know that some issues have been raised recently in South Australia and there have been some suggestions that water is being purchased from South Australia to go to New South Wales, but my understanding is that, if you have a look at the figures over the last 12 months to two years, more water has been traded into South Australia than has been traded out. From that perspective it improves environmental flows because the water is in the river for longer and all those sorts of things, so not only does it help South Australia as a state but also it means that the river environment is healthier.

**Senator HEFFERNAN**—You do not mind if 'Hong Kong Swire Pty Ltd' or 'Carpetbagger Pty Ltd' captures the paper trading value of water and locks it in up on the Gold Coast somewhere? That is what you can do in South Australia.

**Mrs Starick**—No, you cannot.

**Senator HEFFERNAN**—The previous witness said that you could paper trade water.

**Mrs Starick**—You can trade water but my understanding is that there are guidelines about where you can trade that water to.

**Senator HEFFERNAN**—It is not the trading; it is the ownership. Can you have a piece of paper that says that I own 1,000 megalitres of water? In other words, it is separated from the land title. Can a financial institution, a carpetbagger or Billy Bloggs from Timbuktu own water in South Australia through the piece of paper?

**Mrs Starick**—They can with land. The issue is whether that is actually a really good thing for the community.

**Senator HEFFERNAN**—That is what we are asking you.

**Mrs Starick**—Our position is that there should be free trade but there should be some policies in place to ensure that we are not getting the large ownership—

**Senator HEFFERNAN**—You said that South Australian farmers are happy with the water trading regime.

**Mrs Starick**—Yes.

**Senator HEFFERNAN**—You have a water trading regime in South Australia whereby I, from June, can own all your water if I want to. Would you be happy with that?

**Mrs Starick**—You have to pay for it, though.

**Senator HEFFERNAN**—Yes. You would be happy for me to capture the capital base value of your water from the struggling farmer who has to get greater efficiency, put in his drip et cetera while I get the wealth and he operates on the spot market for water?

**Mrs Starick**—I guess there is no issue there, though. The same happens for land. There are entrepreneurs and big trading organisations that currently own a number of properties in South Australia.

**Senator HEFFERNAN**—You do not mind a person who has no connection with the use of the water owning the water? South Australian farmers ought to get this into their heads: they are after the capital growth of the value of the water. I personally do not think it is fair for that wealth to be transferred to a bank vault somewhere. But South Australian farmers do not mind that.

**Mrs Starick**—We understand that there need to be limits in place. But it is about how you manage that. There do need to be some clauses.

**Senator HEFFERNAN**—I have not heard one word of criticism. You say that it is all right.

**Mrs Starick**—I am not suggesting that it is. I am suggesting that there does need to be something in place to ensure—

**Senator HEFFERNAN**—But there is not.

**Mrs Starick**—Something needs to be put in place.

**Senator HEFFERNAN**—After today you had better go back to South Australian farmers and say, ‘We have a serious problem here.’ You do have. You have the capacity in South Australia—uniquely to the Murray-Darling Basin—to be able to paper trade water, which means that someone who lives on the beach at Noosa can own the water, capture the capital base value of it and then trade at the margin to some poor bugger who has sold his water off because he was a bit behind with the bank. For his orange orchard he now has to operate on the spot market as a

tenant water farmer. That is what you are bringing to your South Australian farmers if you kick off and do not criticise what is happening. It is bad news.

**Mrs Starick**—There really needs to be some sort of balance. You can have big businesses and big companies and organisations buying land—

**Senator HEFFERNAN**—But they cannot cart the land.

**Mrs Starick**—No.

**Senator BUCKLAND**—You say that there needs to be balance. Who is going to create this balance? Has the Farmers Federation been involved in negotiations to try to get a balance? Senator Heffernan is making a valid point. As a South Australian it worries me. He could be at Junee and buy the water from South Australia and sell it upstream to someone else. It is not necessarily going to come back to South Australia. Does that not create a concern for the South Australian Farmers Federation and their members?

**Mrs Starick**—Yes and no.

**Senator BUCKLAND**—How no?

**Mrs Starick**—No because there are some farmers in South Australia who are currently sitting on water and are looking at retiring in the next few years and, as they are able to trade the water, they have an asset that they are counting on for their retirement.

**Senator BUCKLAND**—So the land means nothing? Land in this region—I do not know if you have noticed, but I have—and anywhere in South Australia is worthless if it does not have water. How can you say that there is value in land if you do not have access to water?

**Mrs Starick**—I would argue that land values have increased quite substantially in South Australia over the last two years, and that is land that does not have access to water.

**Senator BUCKLAND**—But any block along here relies on the water it can take from the Murray. It does not have sufficient natural rainfall. If you are growing grain or something on the west coast or in the Mallee it is a different question but, for someone dependent on a fruit block, surely selling water up—

**Mrs Starick**—That is a business decision those particular farmers make. If they decide they are going to sell their water and sell their land and they make the decision to sell them to different people, that is purely a business decision which those people are entitled to make.

**Senator HEFFERNAN**—I hear your argument about the wealth retirement fund in your water bonds, but the difficulty in the long term with what you are proposing to an orange orchardist who has, for whatever reason, sold his water off—it is an easy capture for the bank—is that you expect him to operate for his security in the future on the spot market price for water and the availability of that water for a long-term farming future. Is that correct?

**Mrs Starick**—That is purely a business decision that that particular person would make.

**Senator HEFFERNAN**—You do not see any dangers in that?

**Mrs Starick**—Absolutely.

**Senator HEFFERNAN**—So why wouldn't you say, 'Whoa, this could lead to a bunch of carpetbaggers screwing every farmer in South Australia'?

**Mrs Starick**—Because I do not necessarily see that happening at the moment.

**Senator STEPHENS**—But it could in the future.

**Mrs Starick**—It could.

**Senator HEFFERNAN**—So why the hell are you letting it go on?

**Senator STEPHENS**—And what about the environmental considerations of that whole issue of separating the water from property rights and the impact of being able to trade your water upstream somewhere? There are going to be longer term environmental implications of that happening too, aren't there?

**Mrs Starick**—If a substantial amount of water is traded upstream there are but, as I said earlier, in the last two years there has been substantially more water traded into South Australia than traded out. Part of the reason for that is our climate. Also we do not have some of the salinity problems that exist further upstream. There is greater reliability of water in South Australia, which is an advantage we have over other states. I feel for the other states when they do not have access to water because the water just is not there. We actually have quite good reliability in South Australia. Last year was the first time irrigators within South Australia have had water restrictions since, I think, the sixties. We really do have something quite good in South Australia.

**Senator HEFFERNAN**—But if there is a whole lot of new plantation forestry under the 2020 Vision planted at the top of the Murray, what happens? The impact of those fires in the Snowy last year, for instance, was 1,000 gigalitres over nine years, so all the farmers in some of the valleys are going to lose 40 per cent of their allocation. Do you think it is a reasonable expectation that South Australia will not have a dramatic cutback in its allocation?

**Mrs Starick**—That is of serious concern. There are some other things like climate change—

**Senator HEFFERNAN**—Yes, about a 23 per cent decrease in the run-off over 70 years.

**Mrs Starick**—Yes. I do not know whether we have really thought through—when I say 'we' I am talking about the whole community, not only the South Australian Farmers Federation—what the implications of some of those issues are going to be.

**Senator HEFFERNAN**—Do you think farmers generally in South Australia think, 'We've got to get our 1,800 gigs'—or whatever it is—'and it's there for all time'?

**Mrs Starick**—No, I do not believe so, particularly after the water restrictions last year. People are starting to realise that this is a resource that in the future might not be as secure as it currently is. I think there is some of that thinking. Some people are also starting to think about how we manage in dry years. Some irrigators had been using their full allocation, whereas some had not been—they had been using maybe 70 to 80 per cent of their water allocation—so there is some thinking about how we prepare ourselves for dry years and some of those sorts of things. That is no different from the dryland farming community. The dryland farming community need to be prepared for drought. Irrigators are becoming aware that that is an issue for them as well.

**CHAIR**—On the examples where you are talking about some irrigators using their licence up to, say, 70 or 80 per cent, does that mean that, for the amount that is remaining, they might make arrangements with the bank to raise further capital for improved productivity? Are there instances of that, or do they just leave the 20 per cent there unused?

**Mrs Starick**—I think that varies quite a bit between particular irrigators and particular industries. I do know that quite a number of irrigators have actually allowed that water to remain in the river and have not been utilising that water to improve their—

**CHAIR**—Do you only pay for what you use, or do you pay for your entitlement?

**Senator HEFFERNAN**—A bit of both, I think.

**Mrs Starick**—I think it is a bit of both.

**CHAIR**—Does the South Australian Farmers Federation give any thought to the possibility of looking at a national regulator dealing with water trade?

**Mrs Starick**—I really do not know, as far as that goes. I am aware that there have been some instances where it has been talked about, but that is something that I think we as a committee would really need to talk about.

**Senator BUCKLAND**—You made a fairly detailed submission to the House of Representatives inquiry. What is the federation's view on the report that came out in relation to that? There has been public comment on it. What was your overall view on that report?

**Mrs Starick**—We as an organisation have not had an opportunity to sit down and formally review that report. I guess I could give you my own personal view, but I do not know that that would necessarily be supported by the organisation that I am here representing. But we could forward something to you in writing.

**Senator BUCKLAND**—I think we would appreciate it if you would take it on notice to do that—

**Mrs Starick**—Yes, certainly.

**Senator BUCKLAND**—because I have heard varying comments come out. You said a moment ago in answer to, I think, Senator Stephens that we do not have the salinity problems they have upstream. How do you come to that conclusion?

**Mrs Starick**—I guess when I say that, we do not currently see some of the salinity problems that they have upstream as far as salinised land goes, but, in saying that, there are saline inflows already into the river which have historically been here in South Australia. There was also an issue in the past with land clearing of the dryland mallee areas in South Australia and exactly what implications that is going to have. We are already seeing ground water recharge, but it has not had an impact on the river as yet. But we are talking about the sorts of impact that that might have over the next 20, 50 or 100 years. I think it is a little bit unknown at this stage.

There are also issues about irrigation practices, particularly past practices, and how they have impacted on the river as far as increasing salinity of the river itself. I guess I do agree that to say that we do not have salinity problems in South Australia is incorrect, but we have different salinity problems than parts of Victoria or New South Wales.

**Senator BUCKLAND**—Regarding the leaching—and that is not the only salinity—back into the river of water, fertiliser and things, that all comes down here, doesn't it?

**Mrs Starick**—Yes.

**Senator BUCKLAND**—That is quite a different thing. So we still have the pollutants that go in upstream coming through.

**Senator HEFFERNAN**—If they ever turned the pumps off upstream you would be in deep doo-doo.

**Senator BUCKLAND**—We would probably risk our hand. You also mentioned earlier, Mrs Starick, that there needs to be an encouragement of cross-border negotiations on tradability of water. Has the South Australian Farmers Federation Natural Resources Committee tried to encourage that? Has it taken part in any discussions to try to get it under way or initiated something?

**Mrs Starick**—To date, not that I am aware of. We have a little bit of difficulty in South Australia in that sometimes our input from irrigators is fairly low. Unless there are issues that impact on irrigators we tend not to hear from a lot of irrigators. That is not to say that we do not have a lot of members who are irrigators, but while things are quite happy and content and, as they see it, moving along quite nicely they do not come to us as an organisation to knock on doors and put forward their point of view.

**Senator BUCKLAND**—I understand that. You said that a lot of your irrigator members are quite happy to see land prices go up without water allocations attached to them—or that is what you were leading to. Have you surveyed your membership in relation to that, or is it just anecdotal?

**Mrs Starick**—It is mainly anecdotal. I am not sure whether you are all aware of the Lower Murray swamps around Murray Bridge in South Australia. They are currently going through a restructure, which is having a fairly big impact on that community. At the moment they flood irrigate swamplands, which are used for dairy industry pasture. They are having a restructure, in that some of the swamps are going to be taken out of production and are going to be allocated to environmental type works. In the future they are not going to be able to allow any drainage water

off some swamps back into the river. There is going to be a whole restructure, things like laser levelling and different management practices.

Initially, when that particular program was developed, there was some sort of feeling about the percentage of dairy farmers who would leave. What they have found is that, since implementing that program, they have had substantially more dairy farmers leave. Part of the reason they have been able to leave is that they have been able to, one, sell the land and, two, sell the water. In some instances that water has been divided from the land. In one particular instance there was an allocation that remained with the land, so even though they had a water allocation that they could sell they also had some allocation which needed to remain with the land as an environmental benefit to that land.

**Senator HEFFERNAN**—In New South Wales we have high-security water, which you cannot trade, because it attaches itself as a riparian thing. Is that what you are talking about?

**Mrs Starick**—With this particular water I do not think the allocations are large enough to have any productive benefit; it is more about having an environmental benefit. It does remain with the land. You cannot trade it.

**Senator BUCKLAND**—You also talked about how you need to balance—these are my words—the industrial use, which I would term the farm use of water, with the environmental use, and you discussed some things about the environment. There is also recreation. Does the Farmers Federation get themselves involved in community groups et cetera to try to balance what is recreational use, what is farm use and even what is use by the aquaculture folk?

**Mrs Starick**—As an organisation, I guess we do on different levels. It really depends on which area of the state you are talking about. When we are talking about state policies or federal policies that might come from the Australian government, definitely SAFF as an organisation at head office gets involved in discussions with other state-wide organisations. When we are talking about local communities, usually the individual branch level of SAFF is left to get involved in those discussions.

**Senator BUCKLAND**—You use the words: ‘We need to be working as a community as a whole on this.’ Are you in fact working as a community as a whole and taking part in discussions about the environmental use, the recreational use and the commercial use of water?

**Mrs Starick**—I think so. One positive thing is that the South Australian Farmers Federation has a seat on the committee of Waterproofing Adelaide. That is something that in the past we would not necessarily have had the opportunity to sit on. It does impact on agriculturalists as well as on industry and the metropolitan community. That is quite a positive. We are all working together as a committee and working quite well, so that is definitely one positive. In a lot of instances we as an organisation at least have knowledge of catchment boards. We often get catchment boards along to our committee meetings and we are often asked to participate in their planning processes, so we do have some involvement from that perspective.

**Senator HEFFERNAN**—Are those on catchment boards seen from a South Australian farmer’s perspective as political appointments or political stooges?

**Mrs Starick**—It depends on which part of the state you are talking about. There has been some political involvement in some of the catchment boards, but I would suggest that the River Murray Catchment Water Management Board, as it currently stands, is a very good board and that the people are there for their knowledge and experience. Those on that catchment board are not seen to be political appointments.

**Senator BUCKLAND**—Has the SAFF ever been involved in water trading, in assisting in the trade of water or in looking for buyers for its members?

**Mrs Starick**—Not to my knowledge, but I could take that back to the organisation, find out for you and provide some written information.

**Senator HEFFERNAN**—I am curious about your laissez-faire attitude to paper trading in water. Can I take you to the Gwydir aquifer, which is around Moree, where they grow all the cotton. We discovered that 25 per cent of the water bore licences there were owned by people—and there was a water-sharing plan to be implemented last July, and it has been twice deferred—who did not have an aquifer. On 1 July they were going to be able to separate those licences from land that had no water under it, sell those licences to people who had water under their land and get \$1 million per 1,000 megalitres for the paper sale. When I first went to the New South Wales minister he said, ‘Of course that couldn’t be right,’ but it is right, so they have deferred the plan. When I went to the NSW Farmers Association and asked, ‘Why are you silent on this issue?’ the appropriate person there said to me: ‘Senator, you’ve got to understand that we’ve got a lot of farmers who own those licences and who are going to get those millions of dollars. Therefore we were silent.’

In South Australia, do you have people who want to trade water as a paper living? In other words, do you have a similar conflict? Is some of the influence the laissez-faire side that says, ‘We’re not so worried about paper trading’? You are obviously saying today that the South Australian farmers are quite happy to have tenant water farmers. You said there were some people who want to retire and live off their water. Isn’t that a conflict? I mean that with respect to the best interests of the people who have to make a living from using the water. The only way you can make a living from owning the water is by trading the marginal water, which means screwing that margin out of the person who has to use it and adding the capital growth, which is what they are really after. Isn’t that a serious conflict?

**Mrs Starick**—In the instance I was citing, those particular people have not had a water allocation in the past. They have been allowed to take water but they have never been given a licence that they can trade. Now they have been given a licence, so even though that water may be taken out of production in that particular area it will still remain within the River Murray system.

**Senator HEFFERNAN**—Can I take this a little further because I want to highlight this to the South Australian farmers. There is a body called Thames London, who used to be a utility organisation in London, and they decided they would diversify and get into other forms of investment, so they got into water. In central Africa they own a lot of the water, to the point where a lot of local communities cannot afford to drink their local water and they are going back to digging shallow wells to try to get water for their villages because they cannot afford to pay the price. In America there are desert developers—Las Vegas type developers. I had a phone call

a few weeks ago from a guy who used to try to grow cotton at Hay, and he has picked up on what I have been saying. He said, 'You are right.' They tried to grow cotton in Hay in the sixties with northern varieties that failed, but now they do grow cotton because there are more winter varieties of cotton—Hillston in particular. He said, 'Over here in America—he went back to America; he is American—we now have developers who are paying \$500,000 per megalitre for water because they want to develop these millionaire enclaves out in the desert, and they are pricing the water out of the farmers' hands.' You do not think that is a problem?

**Mrs Starick**—It potentially could be a problem—

**Senator HEFFERNAN**—It is a problem.

**Mrs Starick**—and I think there obviously need to be some rules. The catchment area I am in is part of the Murray-Darling Basin, but it is a small catchment and we have both surface and ground water. We are going through a planning process at the moment and we are going to have some rules about how you can trade water. For instance, you will not be able to trade water from an efficient system to an inefficient system. If you are an inefficient user, you can trade it to a more efficient user.

**Senator HEFFERNAN**—Wouldn't the market determine that—in other words, the price of the water? Wouldn't a deep market between users drift the water to the better user?

**Mrs Starick**—It may, but there are always going to be instances such as the grape industry—it has always been supported as being an efficient user of water, and I do not discount those sorts of things—which will for a number of years go through some turmoil in commodity prices. That is not to say that we should not be supporting those irrigators who have planted vineyards, but it may not necessarily be the best dollar use for the water.

**Senator HEFFERNAN**—In fairness to the grape growers, there are some seriously efficient users of water in vineyards and there are some seriously inefficient users. But that is a thing for the market. If the water gets dearer and they cannot afford it, they get out of it. I do not have any problem that. I have a great problem with the prospect of a regime of tenant farming for water. You say that the bell has not rung down here yet. That is because they are only just getting wound up and they are not too sure what the eastern states are going to do—whether they are going to allow it. The Commonwealth have said, 'We are going to try to keep speculators out of the market.' I do not think the Commonwealth know how, but at least we have rung the bell with our own government and we were desperately trying to ring the bell with you.

**Mrs Starick**—Obviously that is an issue I am going to have to take back to the organisation. We are going to have to sit down and think about it seriously. I guess that is really the issue for us: that it has not raised its head as an issue, so we probably have not really thought through all the implications.

**Senator HEFFERNAN**—What is the South Australian Farmers Federation doing in relation to creating better efficiencies in water usage? Have you got programs or peer pressure or model farms or pilots?

**Mrs Starick**—We as an organisation do not, but we do support organisations that do—for instance, the River Murray Catchment Water Management Board. They are the ones that have the programs. We do not have those sorts of on-ground programs; we deal more with policy and looking at policy. To some degree we do encourage our members to be better users of the resource, whether it be water, soil, vegetation, whatever.

**Senator HEFFERNAN**—I take it you are in strong disagreement with the VFF, the Victorian Farmers Federation, over their attitude to water. You would have a different position, would you? The Victorian Farmers Federation thought the early, interim report of the lower house water committee, whatever they call themselves—the dreamers—was a beaut report.

**CHAIR**—Was that a committee of parliament?

**Senator HEFFERNAN**—Yes. That is a committee of the lower house.

**Mrs Starick**—As I said earlier, as an organisation we have not had an opportunity to discuss that report. We have not had a committee meeting to formally talk through that report and talk about what our position might be.

**Senator HEFFERNAN**—I am amazed there is not some urgency. I would have done it that night. Do you think there is a role for the Commonwealth to have an overview of the management of water in Australia? As you know, the rivers do not actually stop at the borders. We have got that dreadful national disgrace on the Lower Balonne with Cubbie Station. Do you think it would worry the average South Australian farmer that no thought is given to the growth of plantation forests at the top of the Murray and to other issues that are going to diminish the water run-off for the Murray? Would you feel that you should have some input into those decisions for South Australia—in other words, that there should be some overview of the whole thing by a body? In planning for the 2020 Vision for the trebling of plantation forests by the year 2020, not one stitch, not one sentence and not one statement was made in the planning about the impact on the run-off. It is just a complete oversight by the various governments upstream which would have a serious long-term effect, not only in the cutback of allocation to farmers but on the health of the river. I do not want to worry you but it worries me.

**Mrs Starick**—There definitely is a role for the Australian government to have some sort of overseeing role but, at the same time, I would not like the states to—

**Senator HEFFERNAN**—Give up anything.

**Mrs Starick**—not be allowed into the decision-making process. It is really important that everyone is included in that process. From the Australian government's perspective, if the Murray-Darling Basin were only managed by one body that was a national body without representation from South Australia, there would be a danger.

**Senator HEFFERNAN**—I agree with you. One of the difficulties that we face is that in Queensland there are people who think that what runs off in Queensland should stay in Queensland. The Culgoa at Bourke used to deliver 26 per cent of its flow there. Now they think that between four and six per cent is a fair thing. You are on the receiving end of all that thinking.

**Mrs Starick**—That is a serious concern for us.

**Senator HEFFERNAN**—Are there financial incentives for farmers to reduce their water usage?

**Mrs Starick**—Only incentives offered through either catchment boards or other organisations, but not through our own organisation.

**Senator HEFFERNAN**—Do you have any comment to make on the Pratt proposition?

**Mrs Starick**—It depends on what sorts of incentives you are talking about.

**Senator HEFFERNAN**—One of my concerns with a version of the Pratt savings, which would be from piping the water—which is a great idea, no doubt about it, but there are huge costs, to the point where a lot of it may not be feasible—is that there are some people in some quarters who think the savings that are made from that ought to be put back to further use. However, the Murray-Darling Basin, which has 6.2 per cent of Australia's run-off and 70-odd per cent of its water farming, is seriously overburdened. There is no possibility to my mind that, while I am alive, any savings can be set out to create a new irrigation area—because there ain't the water! We have 46 per cent of Australia's water in the north just running out to sea all the time.

**Mrs Starick**—As an organisation we would have serious concerns about something like that. I think that is why we support the environmental flows—because it not only means that the environment is healthier but it also means that in the long term the water quality for industry, agriculturalists or domestic users is better. So we do support environmental flows.

**Senator HEFFERNAN**—I actually think we have got to remove some of the activity, but there is plenty of scope for a new agricultural frontier where the water is.

**Senator BUCKLAND**—Mrs Starick, in answer to a question from Senator Stephens you mentioned the amount of water that had been traded and you got that from some document. Could you provide us with a copy of the document you got that information from? You can take it on notice to provide it, if you would.

**Mrs Starick**—Okay, thank you.

**CHAIR**—Mrs Starick, I note that you have agreed to provide further information on two matters. The secretariat will contact you about that.

**Senator HEFFERNAN**—I have one more question. Are the South Australian farmers quite relaxed about tradability and saleability of high-security water? There is a certain premium attached up the top end of the river to high-security water. You do not mind if that is just traded?

**Mrs Starick**—I guess that is the thing in South Australia: our water is high-security water.

**Senator HEFFERNAN**—I know. You have put a different emphasis on it. We do not have the luxury of—

**Mrs Starick**—That is right. It is quite different in New South Wales. You have high-security water and the water that is divvied out, depending on—

**Senator HEFFERNAN**—Do you think it is realistic in the long term for that system to remain in place in South Australia? In other words, do you think that if an average farmer at Hay has his allocation cut by 50 per cent because of the 6.2 per cent of the run-off from the overburdening of the system generally, for some strange reason things ought to remain the same down here?

**Mrs Starick**—I think that we really need to look at the basin in parts and look at where parts of the system are overallocated; and, if that is the case, then we need to look at how we manage for those overallocations. For instance, the Namoi Valley, as far as I am aware, is overallocated as far as ground water goes and potentially in the future surface water might also be.

**Senator HEFFERNAN**—Let me tell you about the Namoi. In 1983-84 when Neville Wran was Premier he had a water and land minister called Paul Landa, who has since died, who took a deliberate decision to mine over a 30-year period of life the Namoi aquifer. When Nick Greiner became Premier in 1988 Wal Murray decided he would continue that policy. I think there is plenty of scope for a class action against the government because some of the farmers are now losing 85 per cent of their allocation because, despite the farmers' protests at the time, they issued far too many licences with a view to mining the aquifer. That is what happened in the Namoi. It is a disgrace. I am not sure we can afford the luxury of an ad infinitum high-security regime where no thought is given to what is happening all around the rest of the place. I am not saying this is so, because I do not know—that is what we are here to find out, and we are asking people like you the questions to try to get some idea—but maybe some of that water ought to be put back into the flow to do all the things that need to be done to the flow of the river.

**Mrs Starick**—With some of those things, such as where irrigators are only using 70 or 80 per cent of their allocation, that water is going back in as flows.

**Senator HEFFERNAN**—Anyhow, we would be interested to see the figures. Fantastic.

**CHAIR**—Thank you for appearing today and providing assistance to the committee.

[12.15 p.m.]

**BARBER, Dr Chris, Executive Director, Centre for Groundwater Studies**

**PILLAR, Mr Trevor Roy, Manager, Industry Education and Training, Centre for Groundwater Studies**

**CHAIR**—Welcome. I invite you to make some opening remarks before we go to questions.

**Dr Barber**—I am based at the University of Western Australia over in Perth but I also work for Flinders University, which is the centre agent at the moment.

**Mr Pillar**—I work at Flinders University. I am not a hydrogeologist or a water scientist. The nearest thing to natural resources in my former life is mapping, but for the last 10 years I have been running ground water short courses nationally for the Centre for Groundwater Studies.

**Dr Barber**—I think it is fair to say that we were asked to come and give evidence to the committee on a number of issues in relation to ground water in rural areas, which is what we have agreed to do.

**CHAIR**—Do you want to speak very briefly to the submission that you have provided to the committee?

**Dr Barber**—Yes, I would like to. The Centre for Groundwater Studies, the CGS, recognises that the general knowledge of ground water in Australia is pretty woeful. Certainly it has improved over the last 10 years or so, but it is still at a pretty low level and, for a resource which is 97 per cent of all fresh water, that is a pretty bad situation. So one of the things the centre does is run an awareness program which tries to improve awareness of ground water and ground water issues. Our centre has 10 partners altogether in Western Australia and South Australia and one in Victoria. These are water utilities—water corporations in WA and SA and United Water International; two regulatory agencies in the two states; two universities, UWA and Flinders; and a small specialist consulting group, Australian Groundwater Technologies. Our main activities are research and education—postgraduate education as well as more general education of industry and the public—and we do specialist consulting as well.

We feel there are a number of issues with ground water that are particularly important. In the past—a decade or so ago—ground water was really never considered, certainly in the eastern states, as an important resource. But with the recent COAG water reforms it has been recognised that there are very important links between ground water and surface water ecosystems and that, if you are trying to manage a ground water resource, you have to take into account environmental ground water flows, which are basically discharges of ground water. Trying to find a rational way of doing that has been exercising most state agencies. You only have a finite amount of recharge going into the aquifer, and that is balanced by an amount of discharge. If you are intercepting the water and pumping it out then you are reducing the amount that discharges to the environment. Trying to work out how much water you can provide for a whole variety of different environments is a significant problem for most state agencies at the moment, and it

really relates to the overall sustainability of ground water resources. Our centre has been involved in trying to assess rates of recharge, rates of discharge and what is a ground water resource provision for the environment in different areas. It is going to carry on for a lot longer.

We believe as well that there are a number of things that can be done to help manage the resource better. Certainly improved water use efficiency is one. Another thing that we have been involved in is artificial recharge of ground water—taking surface water when it is in excess or taking treated sewage effluent and storing that underground for use in drier times. That is by no means new. The Romans used it centuries ago, using surface infiltration, and that has been practised a lot in Australia. There is a new technique which is called aquifer storage and recovery, which is injection of water underground, particularly in deeper systems—often saline systems or brackish ground waters which are of no use. You actually create an underground storage where none existed previously. Our members have carried out a number of quite large-scale injection trials which have shown that this is quite a viable option in a number of areas and can assist significantly with improving sustainability of supplies.

We have looked at potable water supplies, like storing reservoir water underground, so you avoid evaporative loss and you can pull the water out. You do not lose very much even if you inject into a saline system. With stormwater, that usually just goes straight out to sea through stormwater drains. If you can capture that and store it underground, it can provide an irrigation supply. Treated waste water is pretty much the same, I think. That can be stored underground. You get additional natural treatment because it is stored underground, so you remove the pathogenic bacteria, particularly, which are a problem with reuse. That is being used quite extensively in South Australia to irrigate vines. So it is producing wine from sewage, which is a bit biblical, but it would seem to be a very viable option where a ground water resource has been severely depleted.

On the awareness issue, the knowledge of ground water—because it is a resource that you cannot see: it is hidden away and the only time you see it is when it is pumped out or what you see as spring discharge—is really so bad in some areas that it is an impediment to management. Our centre runs a whole range of different courses from very low-level courses for community groups, which we call ABCs of ground water, through to the national ground water schools and the high-end specialist courses for consultants to improve their skills. I think Trevor probably has the numbers of people we have put through those courses. But even there, although we are putting several hundred people through the courses each year, it is still not improving knowledge at the grassroots. I think what is needed, because our centre is relatively small and not very rich, is funding to be able to increase awareness of ground water issues at that grassroots level—the farmers' level. We believe it is really important. At the moment we cannot do—it we simply do not have the resource.

**CHAIR**—Mr Pillar, do you wish to add any further comments?

**Mr Pillar**—Just a couple of thoughts. There is a dire lack of knowledge about ground water, given that it is massive, slow-moving and unseen. It is out of sight, out of mind. Vegetation increase, vegetation decrease, pollution, overextraction—all of these things have hard-to-predict effects on such a huge resource. In addition to what Dr Chris Barber said, our ability to educate and make people aware is highly dependent on money. It costs a lot of money to make a large

number of people—grassroots farming communities, environmental groups—aware of the behaviour of ground water. It is beyond our capacity to do it.

We have moved from, probably, 100 attendees per year to 400 attendees per year over the period 1995 to now. We are using lots of different ways to do it. There will be customised courses for Queensland EPA in these coming months. Seventy of their staff will go through the courses. The Swan catchment centre will run franchised courses that we are providing notes for. There are also public marketed type courses. Even with that amount of work it is hard to cover the large group that need the ABC of ground water: the farming community and environment groups. That is the big issue.

**Senator HEFFERNAN**—I would like to go through some of the figures for a start. My understanding is that 97 per cent of the world's water is salty—sea water—and three per cent is fresh water. Two-thirds of the fresh water is permanently tied up in snow and ice and 0.25 of one per cent of the world's fresh water is available in the rivers and lakes. In fact, there is more water in the clouds than there is in the rivers and lakes. What is the percentage of fresh water that is actually available in the aquifer?

**Dr Barber**—Ninety-seven per cent of all fresh water is ground water—rivers and lakes—and other forms make up three per cent. They are the general figures that people seem to use.

**Senator HEFFERNAN**—Do you have a summary of all that? I have that in the back of my head, but I am sure the rest of the committee would appreciate those figures.

**Dr Barber**—We have brought along a set of the notes we developed for the ABC course which give those figures for you. We are happy to make those available.

**Senator HEFFERNAN**—Thank you.

**Mr Pillar**—There is a series of pie diagrams that go through all those figures.

**Senator HEFFERNAN**—This committee went to Darwin recently and we were told by whoever it is in charge of water in the Territory—the name escapes me—that they have taken a deliberate decision up there to mine some of the arid aquifers. You would be pretty alarmed by that, wouldn't you?

**Dr Barber**—It is somewhat alarming, yes.

**Senator HEFFERNAN**—I do not think there is any real understanding of the long term.

**Dr Barber**—That is the main reason used for actually doing it. It is not just the amount of rainfall that determines the amount of recharge of an aquifer, it is the overall pattern of rainfall. If you get sudden severe storms you get much more recharge reaching the aquifer than if you had a lot of drizzle but the same amount of rainfall. Over a long period you may have a steady decline in ground water when you are mining it but if you do then have a major storm event then the ground water levels come back up rapidly. This has been seen with a number of aquifer systems, so they are managing it sustainably over a particular period.

**Senator HEFFERNAN**—Are you familiar with the unbroken aquifer of the Murray-Darling Basin west of, say, Albury, Narrandera and Hillston?

**Dr Barber**—No, we are not.

**Senator HEFFERNAN**—When we were in St George in Queensland we were told about this wonderful scheme for the Lower Balonne—that wonderful national disgrace of water harvesting by Cubbie Station and others. They were going to have bunded water licences—a system which is out for comment with the Queensland government now. In the case of Cubbie Station they would bund off tens of thousands of acres, keep the floodwater off the land, and that would entitle them to that water in a turkey nest to grow cotton. There is some debate over whether that is a good decision. Peter Cullen originally thought the system was all right. He now says it would be a seriously bad decision to allow that to occur. Given the unknowns of the aquifer—those waters, for instance, in that flooded channel might be recharging an aquifer—do you think the prospect of bunded water, if it became widespread and you kept the floodwater off flood country to enable you to secure a water licence, would be a bad principle?

**Dr Barber**—In general, I think so. It has been shown, particularly on the Murray here, that river regulation has affected local recharge in some of the aquifers on the flood plain, which have impacted river red gums, for example. That may be a slightly different situation but, overall, you need to manage surface water and ground water conjunctively. You have to know the links between the two systems in any area. I am not familiar with the precise details of the one you have mentioned, but it is of concern. If you affect part of the system then you are going to affect the whole of it.

**Senator HEFFERNAN**—One of the things happening in the Clare Valley where they grow the grapes is that some of the ground water may be becoming contaminated by water from another aquifer that has a different saline content. Are you familiar with those sorts of risks?

**Dr Barber**—We see them a lot.

**Senator HEFFERNAN**—Could you describe some of the dangers?

**Dr Barber**—Sure. With areas like the Clare Valley, where you may have multiple aquifer systems and the lower aquifers tend to be more saline, if you extract water from aquifers closer to the surface, which you would naturally do if it were fresh water for irrigation or whatever, you can reduce the heads so that the more saline ground water starts to permeate up into the upper aquifers and cause increases in salinity, which is well known.

**Senator HEFFERNAN**—Is that happening at Clare? I understand it might be.

**Dr Barber**—Potentially, yes, it is. There are fractured rock aquifers at Clare. We have a research program focused on those at the moment. The salinity is rising in the fractured rock aquifer, which discharges to streams.

**Senator HEFFERNAN**—Is that one of the reasons they are trying to take Murray water over there—to slow that process down? I am not familiar with it.

**Dr Barber**—I am not too sure.

**Senator HEFFERNAN**—To shandy it up, in other words.

**Dr Barber**—That might be a possibility. The knowledge of that aquifer system is not good, which is why we are working on it. We are trying to work on a fractured rock system. It is probably the biggest problem you have in hydrogeology because you need to work out what the fracture patterns are where the water resides, which is quite difficult. If you are looking at ground water discharge to surface waters as well, that is a significant—

**Senator HEFFERNAN**—So there is a long-term danger that it might be better for barramundi than for grapes.

**Dr Barber**—Maybe; I do not know. I do not think it would go that far.

**Senator HEFFERNAN**—I just wanted to colour the conversation a bit.

**Senator BUCKLAND**—You say that protecting ground water quality through land use controls is absolutely critical to what we are doing. I am looking at South Australia and Western Australia here. You have mentioned Western Australia so you can expand on it a bit. What effect do these mining operations that are taking out water that naturally appears in the pits or in the mines have? Is it safe? What effect does it have when they then try to pump it back into the aquifer?

**Dr Barber**—There are potential problems with mines which dewater, particularly where the rock naturally contains sulphide minerals, which can weather, oxidise and form acid leachates. Acid mine drainage is a significant environmental problem which impacts surface waters as well as ground waters. It would be quite difficult to reinject an acid leachate into the ground. It would have to be treated properly before it was reinjected into the ground.

Not all mines have sulfidic leachates—some have more alkaline ones—but what to do with the mine void after the mine has finished is another issue which produces a local problem. These are all localised problems around the mine site. There are other issues with some mining which can cause similar problems where the water becomes aerated and you get acid leachates being developed. So potentially with mine sites where you introduce oxygen in some way, whether it is through mining itself or by producing a void, you have problems from acid mine drainage.

**Senator BUCKLAND**—Are you aware of mines in Australia that are actually treating water to reinject into the aquifer?

**Dr Barber**—I am aware of some preliminary tests in Western Australia looking at reinjecting water into the aquifer that dewater, but there is not a problem—at least at the moment—with water quality. I think the mineralogy of the mine site is such that it is not producing a problem.

**Senator BUCKLAND**—I am not aware of many sites, but there is water being injected into the aquifer in South Australia. You spoke about sewage water et cetera. I do not know whether they were doing that back in the days of the Romans when they were on top of the world but I know that in those days they were not using the amounts of chemicals that are now being used. I

have also looked at this from the point of view of the effects treated water can have on vegetable growing. Is putting it back into the aquifer in itself a filter for it? What do we do to control any chemicals that we are putting into the aquifer for later use?

**Dr Barber**—You are quite right; it is a potential problem, and not just from the chemicals which go in through the sewage. If you disinfect the sewage with chlorine, that can produce some adverse reactions which produce disinfection by-products—things like chloroform, which has known health impacts. With the waste water ASR you can use the aquifer as a treatment medium; it is just like a very large percolating filter.

There is a process called geopurification whereby natural bacteria kill off any pathogenic micro-organisms which might cause health problems with reuse of the water and whereby the bacteria also degrade some of the nastier organics—some of the chemicals that you mentioned—as well as the disinfection by-products. It would seem that if you get the residence time right—say 30 or 40 days or maybe longer—that is sufficient time for these chemicals to be, in the case of organics, destroyed. In other cases they are converted into less harmful products.

It is something you have to be fairly vigilant about. Something like 7,000 different chemicals go down the sewer, including hormonal preparations and medicines as well as a whole host of solvents and things like that. All of these are present at extremely low levels—microgram per litre level and much lower—but there is some concern that, even at those very low levels and particularly for drinking water, they are harmful.

I doubt whether those compounds would have any effect when you are using the water for irrigation—certainly at the human end of things. I think they would be destroyed in the soil very rapidly and not taken up in crops. The amounts are extremely small. One microgram per litre is like looking for a ping-pong ball in the Sydney stadium; it is minute.

**Senator BUCKLAND**—It interests me because I think it is a practical one. It is one of those good things you can do, if it is done correctly—and you have done that. I have to say that these documents are extremely informative. I have only just flipped through them as you were speaking earlier, but I want to look at both of those documents. I think they are particularly helpful. But you would need to choose a site where you firstly can store the water, and it may not necessarily be near where you can get access to reusable water in many cases. If you take where I live in Whyalla, we do not have any natural ground water that I am aware of—

**Dr Barber**—They would be very poor aquifers, maybe.

**Senator BUCKLAND**—If they were there, they would be very poor or highly saline, I think. If the farmer is not drawing it out for his sheep, I doubt that it would be much good. So you could not choose a site there to store water; you would have to look for an area where it could be stored.

**Dr Barber**—That is right.

**Senator BUCKLAND**—My question coming from all of that is: what is the potential for crossover between naturally developing aquifers and man-made aquifers? I am not really sure that I am correct in using those terms, but I would think that if there were potential for a man-

made aquifer, there would already be a natural aquifer anyway. How do you find those areas that are suitable?

**Dr Barber**—There are hydrogeological maps of the whole country now, as well as of each state, at a range of levels. The general geology of the areas is reasonably well known. In the more remote areas, it gets more difficult in that there has been very little development there and very few bores put in to actually look at the presence of ground water, how much you can get out in the ground water quality. But close to the major cities I think there is very good knowledge of which aquifers there are and what the water quality is, and it is not so difficult to work out whether an ASR scheme would be viable in those situations. It is the more remote areas that could be problematic and would need more investigation.

**Senator BUCKLAND**—It concerns me, when you are flying between Sydney and Adelaide or even, as we did this morning, from Melbourne up here, that you fly over large areas that are just salt lakes. I do not think they are all natural. You look on the west coast of South Australia, which is of great concern to me, and you can see the saline areas growing—and growing at a reasonably rapid rate in some areas. It concerns me that we talk about putting water back into the aquifers—so many of the comments in your document are about the sustainability of it—when we have not got it right to date and I cannot see that there is going to be a cutback in the use now. We are drawing too much water out, or we would not be raising the water table. If we are putting second-hand water or processed water back into those same aquifers, that concerns me also as it may be upsetting the natural balance of things. I am not sure how you balance that out.

**Dr Barber**—You need knowledge of a particular area. An example of an area where you have both dryland salinity which is caused by too much ground water and rising ground water levels as a result of clearing is an area in Victoria called Barwon Downs where the upper aquifer is certainly saline and causing dryland salinity problems. There are sediments underneath the upper aquifer in the Otway Basin which is used for ground water supply. It is pumped fairly heavily, it is a confined aquifer system and it is becoming depleted as a result of exploitation of that one aquifer.

Barwon Water have looked at artificial recharge schemes for replenishing the lower aquifer whilst the farmers are looking at ways of mitigating salinity with the upper aquifer, because the two are not connected; there is a low permeability layer between the two, which is essentially tight. You have to look at each particular system on its merits and manage it appropriately. In some cases, aquifer storage and recovery may well cause a salinity problem somewhere in the system if there is a discharge to a river. You have to take that into account and work out what its impact is and take appropriate steps either not to do the ASR or to do it in a way that does not cause a problem.

**Mr Pillar**—One of the principles for injecting water into an aquifer, across EPAs across Australia, has been to inject water of a higher quality than is already in the aquifer. That is a guiding principle.

**Senator BUCKLAND**—If you inject water into an aquifer, I can understand how you can measure that reasonably easily—just treat it like a petrol pump; something would tick over until you put a certain amount of water in the hole. How can you say that you have put insufficient water in if you cannot measure what has been taken out? I do not think that all of the discharge

points of our aquifers are monitored. Honesty might be one way of doing it but it is not a very good system, from what I understand. How can you start to get that balance just by drilling holes and saying, 'We're this high up'? It worries me quite a lot, because I have a great belief that this is one way we can overcome our storage problems.

**Dr Barber**—With aquifer storage and recovery you actually get and recover through the same bore—if you are injecting into a poor quality aquifer that is the only way to do it. It has the advantage of cleaning out the bore, because you get solids which clog the bore during the injection, as you are putting huge volumes of water through a very small surface area. You know how much you have put in and you know roughly the efficiency of the system, so you know how much to pull out. But there are situations where the water quality in the aquifer is much better, where you could inject at strategic points and abstract from other points. I think the abstractions would have to be managed in that situation to make sure there was not over-development.

**Mr Pillar**—I think you have hit upon a point of trust that is pretty widespread. I look at Perth and think, 'How can they manage the sort of system where every fourth household has a pump and polluting an aquifer is quite easily done.' They could just empty an insecticide truck every night and—

**Senator BUCKLAND**—Yes.

**Mr Pillar**—Trust is a big issue—knowledge first, then trust.

**Senator BUCKLAND**—Yes, I think trust comes a long way down the list.

**Dr Barber**—It comes back to awareness.

**Senator BUCKLAND**—And education.

**Dr Barber**—I think people in Perth are much more aware that what they do at the surface impacts on the ground.

**CHAIR**—I want to ask a very quick question—and I appreciate the publications that you have provided; they are very informative. Are you familiar with the Wentworth Group and the blueprint that they have produced for looking at water management in the country?

**Dr Barber**—Yes.

**CHAIR**—I wondered whether or not the idea of ground water studies or the theory that you promote was included in some of the thinking that shaped the development of the blueprint by the Wentworth Group and whether or not you would care to make any comments. We have mixed views about whether or not it is a good blueprint, and it is useful to know the full story. I cannot recall from looking at that document whether ground water was mentioned at all.

**Mr Pillar**—I do not have enough knowledge of the document.

**Dr Barber**—I wrote a letter to the *Australian* referring to an article which referred to the Wentworth report. The article itself did not mention ground water once so I wrote to the

*Australian* to try to put things right and got taken to task by the Wentworth Group. I know both Peter Cullen and John Williams, who said that they referred to ground water throughout. Probably they did, but I think ground water still sits in the background in a lot of these environmental issues. It is just endemic. People are so unfamiliar with it that it is very difficult for them to talk about it knowledgeably. Yet a lot of the rivers that flow through dry periods receive ground water as base flow. It is what keeps them flowing. The ecosystems are maintained. You simply cannot ignore it; you have to take it into account. It is a lot better now than it used to be, thank heavens. Overall what the blueprint suggests is that taking account of the whole system is really the way to go. We have managed the system too far the other way, particularly the Murray, anyway.

**Senator STEPHENS**—First of all, I am interested in whether you have a seat at the table on national discussions about water and water reform.

**Dr Barber**—Yes, there is a committee called the National Groundwater Committee which is made up of all the state regulatory agencies plus BRS and AFFA, I think, and Commonwealth representatives. I sit on that committee on behalf of CGS. Two of our members are also represented on that committee. That committee reports to the Land and Water Biodiversity Committee. These committees change their names every year, it seems. It is difficult to keep up; I think that is the latest one we are attached to. That committee gets reported to on the courses we run, and advises us on which courses should be run. We had a recent workshop which identified research priorities related to sustainability. They have a big input into our centre.

**Senator STEPHENS**—That is useful to know. In your submission you say that land use controls are critical to the protection of ground water quality. Can you talk us through some of the issues around the importance of that? In the very strong protests in New South Wales about the new catchment management arrangements, land use controls figure fairly prominently. Probably one of the biggest protests is that people are saying that they are going to be told that they will no longer be able to continue some of their land use practices and that some industries perhaps will have to move. Can you talk about that issue a little more and explain its relevance and importance?

**Dr Barber**—In terms of ground water quantity, obviously the clearing of land is critical to the development of dryland salinity. There needs to be some degree of control there. I think it was mentioned in the earlier submission about plantation water use that pine plantations are a big issue in the Perth region and also in the south-east of South Australia. The plantations not only greatly reduce recharge but also have their roots in the ground water system. They act as ground water pumps—there is no recharge; in fact there is negative recharge and it is abstraction through trees—which is having an important bearing on the sustainability of the aquifer. There are a range of ground water quality problems—not just salinity but nutrient accessions—which could call for regulations related to fertiliser use and, perhaps in rural townships, septic tank disposal and centralised sewage treatment compared with septic tanks.

There are also potential problems from the use of pesticides in agriculture which leach down into the ground water system, particularly some herbicides that have been noticed in the past. More recently major problems have been noticed in relation to acid sulfate soils, which are similar to the mining issue that we talked about earlier where you can drain land that has quite a high water table. This process can expose some of these minerals to weathering which produces

acid leachates and has produced contamination of ground water by iron but more worryingly by arsenic, which is potentially a major problem. I believe it has affected ground waters in the Perth area and is affecting areas in New South Wales and Queensland. It is quite widespread and, again, it is land use decisions to drain land for development which have given rise to those problems. That is a kind of broad-brush run through the issues.

**Senator STEPHENS**—It raises a lot of question marks, doesn't it, around current land use practices.

**Dr Barber**—It makes you wonder whether you should breathe or not, if it has an impact.

**Senator STEPHENS**—I am quite interested in the whole issue of aquifer storage and recovery. Are you able to provide us with any information about where you have been monitoring that and what the results have been or is it too early at this stage?

**Dr Barber**—No, it is not too early. There are a number of short one-page flyers on case studies. There may be as many as 15 studies, mainly done in South Australia, where they have gone for it in a big way.

**Senator STEPHENS**—Is that because you are based here?

**Dr Barber**—I am based in Western Australia. Potentially, there were a lot of advantages locally within the Adelaide city area. There was the right aquifer, which is underneath the Adelaide clays, where they could inject the stormwater and reuse it. Initially they did tests on stormwater and five or six studies were done on that. Two major studies have been done on waste water—there is one near the Bolivar treatment plant in the north and the other involves the Christies Beach sewage treatment plant—both of which were for irrigation of vines. It involves the storage of as much of the effluent as possible over the winter when there is no demand so that it can be used in summer, which is the advantage of ASR—it tends not to go away. We could get a number of those flyers from the specialist consultancy company which is one of our members and which has produced these. One of their main areas of activity is setting up aquifer storage and recovery schemes. We can get hold of those and send them to you. We have probably got them electronically.

**Senator STEPHENS**—That would be better.

**CHAIR**—Going back to your comment about plantation forests acting like large pumps and having a negative effect on recharge, have you undertaken any studies or research to affirm that? You may not be aware that the committee is also at the tail end of the process of completing its report on plantation forests. This has come up on a number of occasions in relation to the current inquiry as well as the previous one. I am very interested in whether you have any research you might be able to provide us with that confirms that, particularly in South Australia and Western Australia, as you mentioned.

**Dr Barber**—There are some major research projects on the Gnangara Mound in Perth, where the major pine plantations are juxtaposed with the supply areas for Perth's domestic supply. That work is currently trying to model the system and quantify the amount of water that is being taken out by the pine trees. It is a work in progress. They are using a lot of sophisticated techniques,

spending a lot of money and involving the CSIRO as well as a number of other groups to try to get the right information to assess the actual impact of the pines. I imagine there is a lot of debate between conservation groups, land management groups and the forest products division, which actually own the pines, on what the impact is compared with, say, the banksia woodlands, which are the other areas on that Gngangara Mound. It is generally thought that the banksias take out much less water than the pines. There is also a study being done for the Department of Water, Land and Biodiversity Conservation on the South Australian scene, again with the CSIRO. I think they have the forestry division of the CSIRO involved in that. We could maybe find out for you whether there are any preliminary reports available from those research projects which might be of assistance to you.

**CHAIR**—I might get the secretariat to get in touch with you, possibly just to get the full titles of the research projects that are currently in train. It would be useful for us to get some of that data at least. Thank you both for coming along and appearing before us. The committee appreciates the work that you are doing and for providing very useful information. Again, on behalf of the committee, thank you for attending.

**Proceedings suspended from 1.02 p.m. to 2.15 p.m.**

**SHILLABEER, Mr Neil, Committee Member, South Australian Murray Irrigators Inc.; and Chairperson, Meningie and Narrung Lakes Irrigators Inc.**

**ZADOW, Mr Ian Leslie, Vice-President, South Australian Murray Irrigators Inc.**

**ACTING CHAIR (Senator Heffernan)**—Welcome. Obviously, here you are protected by privilege so you can be as frank as you like. If you would like to make an opening statement then we will ask a few questions.

**Mr Zadow**—I am an irrigator at Caloote, on the River Murray, which is roughly halfway between Mannum and Murray Bridge. It is quite a small township. I am Vice-President of the South Australian Murray Irrigators, which is a group that represents irrigators from the border right down to the lakes at Meningie. I have been involved with the South Australian Murray Irrigators for three years. We needed some representation from our state, along with the other states, to address issues concerning the river. We are a member of the Irrigators Inc. group, which has representatives from, as well as our state, New South Wales, Victoria and Queensland. We meet together four times a year in each state to address issues ranging from state issues to the federal issues. It has been going along quite successfully at this stage, although there have been no outcomes, I suspect, but we have had quite an input into on-ground issues concerning the irrigation industry. I do not know whether Neil would like to give a bit of an overview on himself. Neil is a fellow member of our committee.

**Mr Shillabeer**—Just to add to the things that Ian has told you, I am also an irrigator in the lakes area at Narrung, which is down near Meningie. We pump out of both Lake Albert and Lake Alexandrina. I am the Chair of the Meningie and Narrung Lakes Irrigators association, which was formed to deal with drought associated problems with the river in the recent 18 months in particular. Our issues in that area, whilst they are tied to those of the South Australian Murray Irrigators in general, are a little different because we are at the bottom end of the system, so to speak. At times people have said to me that Lake Albert in particular is a bit like a toilet with a broken cistern in that you cannot flush it. It does create problems with water quality. The issues that are currently in the media about environmental flows certainly play a big part in what we do at that end of the river. We are here as representatives of the whole irrigator cause and that is the objective of the day, as I take it.

**Senator STEPHENS**—Is the South Australian irrigators group an association?

**Mr Zadow**—It is, and it is the South Australian Murray Irrigators. We are actually confined to the river; it is not the underground water group. We are strictly confined to the river. We are an association.

**Senator STEPHENS**—How many members would you have?

**Mr Zadow**—About 3,000, roughly.

**ACTING CHAIR**—What percentage would that be of the irrigators?

**Mr Zadow**—It is probably about 80 to 90 per cent. A lot of our members are a members of trusts, like CIT or the Renmark Irrigation Trust—I am not sure whether you are aware of those trusts, which have a big membership. I think there are about 1,000 private irrigators outside of the trusts.

**Senator STEPHENS**—This morning we had quite long discussions about the issue of licence trading and the separation of water rights from property rights. Are you able to tell us what the view of your association is on the issue of water trading?

**Mr Zadow**—Do you mean within the state or more generally?

**Senator STEPHENS**—Within the state and also generally. That is actually the crux of one of the issues we were dealing with this morning: being able to trade out of the state. What is the situation for your organisation in South Australia to begin with?

**Mr Zadow**—Within the state we certainly feel that there has been a need for the trade to continue. Are you talking generally about leasing or about purchasing?

**Senator STEPHENS**—Both.

**Mr Zadow**—There was quite an issue with the leasing aspect when the restrictions came in. A lot of people who were leasing were in a lot of trouble simply because the restrictions placed a cap, I suppose you might say, on the amount of water that was available, because all of a sudden the registered water holders they had been getting their water from actually needed that water themselves.

**ACTING CHAIR**—In other words, these characters were tenant farmers: they relied on the spot market for their water.

**Mr Shillabeer**—Perhaps I could explain that a little better because I would put myself in that category, Senator Heffernan: my business operates mainly around annual lease and the ability to lease water on an annual basis.

**ACTING CHAIR**—What do you grow?

**Mr Shillabeer**—Potatoes, carrots and lucerne. The cost of water was obviously forced up this year because of the restrictions and the need for people who have permanent irrigation blocks, like citrus, vines, almonds and those sort of things, to go out and lease a bit of water to pick up the 35 per cent losses, which was the initial cutback in the restrictions. That forced the price of water up considerably. In an annual lease situation, for somebody who relies on that, that becomes an encumbrance financially. It also works the other way: when the years are significantly better and there is quite an amount of water available then the price of water drops.

**ACTING CHAIR**—What was the price of leased water this year?

**Mr Shillabeer**—Our normal leasing price over recent years has been in the vicinity of 3c to 5c per kilolitre. This year it got up to 40c at the start of the season and settled at about \$150, which is 15c, and then came back at the end of the season to about \$53.

**ACTING CHAIR**—A megalitre?

**Mr Shillabeer**—In cents it is a kilolitre, or \$53 a megalitre. So the initial impact of the restrictions was pretty significant.

**Senator BUCKLAND**—Who do you actually lease the water from?

**Mr Shillabeer**—Anybody who has a water allocation anywhere on the river system—be it New South Wales, Victoria or South Australia—who has allocation that they do not require themselves. They can make that available to be transferred temporarily.

**Senator BUCKLAND**—I have a difficulty with the word ‘leasing’, because it is something that you cannot give back at the end of the day.

**Mr Shillabeer**—Perhaps we should not be calling it leasing; perhaps we should just talk about temporary transfers. There is permanent transfer and temporary transfer. A permanent transfer you actually own in perpetuity and a temporary transfer is something that is only an annual arrangement.

**ACTING CHAIR**—You can lease it off another farmer who has not used it.

**Mr Shillabeer**—Yes.

**ACTING CHAIR**—In South Australia you have this unique capacity to have the bank own the water and you can lease it from the bank if you want to. Does that worry you?

**Mr Shillabeer**—Security on licensing worries us, yes.

**ACTING CHAIR**—We are terrified of it. You will have missed this morning’s episode on investment vehicles owning the water and you, the tenant farmer, being subject to the spot market manipulation of the price of water.

**Mr Shillabeer**—One of the fears of SAMI irrigator members is that the security of their licensing or their allocation is at risk. We have had instances in the past where government have actually removed certain levels of allocation from people that were not using it at the time. That is a factor that is in the back of everybody’s mind. They are concerned that, with the buyback in governments’ minds, maybe there will be an acquisition happening and a cutback on allocation. In South Australia in particular, where it is 100 per cent high-security licensing, as compared to New South Wales, where it is probably 10 per cent high-security licensing, that becomes a concern because banks suddenly devalue your property because you have not got that ability to have that high-security licence allocation.

**Mr Zadow**—We went through that ourselves. We are the owners of all of our water, all of our licence, but in the mid-seventies we were not using all of our water. They went through and took an average of what we had used over the previous five years and then gave us 10 per cent above that amount. We actually lost over half of our water. I represented myself at an appeals tribunal. At the time, my son was 10 years old. I said: ‘Look, I know we’re not using all our water. If I had broken the pipe up on the road and pumped it so that it went through the meter, I could have

kept it all, could I? It would just be the cost of the pumping.’ They did not agree with that, of course. I said, ‘My son’s only 10—I may need all that water in 10 years time.’ That is exactly what happened. I had to go out then and buy back my own water, basically, to have our farm operate with enough water.

**Senator HEFFERNAN**—What do you grow?

**Mr Zadow**—I grow potatoes and some pumpkins. At that time we were growing lucerne. I have that option to grow whatever, but I am predominantly a potato grower.

**Senator BUCKLAND**—Following on the point about the value of the water, what is your view on the value of a property—if you were to sell your property without a water allocation, what effect would that have for the person coming in? Would it be cheaper? Would your property be devalued?

**Mr Zadow**—Certainly.

**Senator BUCKLAND**—Would you agree with the view, as I heard it, from the Farmers Federation give this morning—my colleagues will correct me if I am wrong—that property prices are rising?

**Mr Zadow**—They are. It is probably a little difficult for me to draw some hard and fast conclusions. I have actually just sold some of my high land dryland farming property. It would not have been suitable for agriculture, but the price for that itself is rising. But any land that is suitable for irrigation certainly would be devalued without water on it.

**Mr Shillabeer**—If the ability to get water on it was taken away, the land would be worth half or less than that. Perhaps I can highlight it by a recent happening to do with councils and valuer-generals. I bought a property two or three years ago in our area, right on the lake. It had no water with the property at the time and no water licensing. The council valuer or the valuer-general valued it at \$120,000 more than I considered was fair. When I appealed and went to the valuer concerning this matter, he simply said, ‘That place is valued because it is an irrigation place.’ I said, ‘But it’s not because there’s no water there.’ After a process of argument, at the end of the day they actually devalued that place by \$100,000 on my rates. That highlights the fact that values can vary depending on the water situation.

**Mr Zadow**—There would not be a substantial lessening of the value if the land was not suitable for irrigation. Someone would buy the land simply because it could be irrigated, even though there is not water with it.

**Mr Shillabeer**—If the ability for that country to be watered is there, then the value is okay.

**Senator HEFFERNAN**—We heard from the Farmers this morning that some of their guys want to have their water rights as an investment to retire on—they will just farm them out annually. There is the prospect that, with the banks and others being interested in these for investment vehicles investing in the capital value of the water, that you could have speculation. You could have people withholding water, knowing that you need it and that next week you will pay more than this week. Does that worry you fellows?

**Mr Shillabeer**—No, not considerably, because at the end of the day the water market is a bit like any other market: it is a supply and demand situation, and you can be the biggest water holder in the country but that water is not worth anything to you unless somebody wants to take it up and use it. So there is a levelling effect derived from that by way of supply and demand.

**Senator HEFFERNAN**—So you are not worried about losing it? For instance, on your farm, Mr Zadow, you have the water as part of your capital base when you go to the bank. They may say, ‘Yes, we can lend you the money to put in a bit of trickle, or what ever you want to do,’ whereas on your farm, Mr Shillabeer, they may say: ‘Hang on, son, you’re reliant on the spot market for the price of water. You’re a bit dodgier.’

**Mr Shillabeer**—It would not be any different.

**Senator HEFFERNAN**—Why not?

**Mr Shillabeer**—Because the ability to water is there. There is nothing to stop anybody from taking my place and irrigating it.

**Senator HEFFERNAN**—Yes, but the water is not guaranteed.

**Mr Shillabeer**—It is not guaranteed but they can go out and buy it.

**Senator HEFFERNAN**—You must have a very generous thinking banker, is all I can say.

**Mr Shillabeer**—I understand where you are coming from, but I think you will find that banks do not actually take water as security in its own right. They will take into account the fact that a property has the ability to irrigate without encumbrance other than having to buy the water or to lease the water.

**Senator HEFFERNAN**—Surely a farmer who has water attached to his property as part of the deal—it might be a separate thing but it has the same owner—would be a better proposition than a bloke who had to rely on—

**Mr Shillabeer**—It would be, yes.

**Senator HEFFERNAN**—If enough water gets into investment vehicles there would be the capacity to manipulate the price.

**Mr Shillabeer**—The short answer is yes.

**Mr Zadow**—The short answer would be yes.

**Senator HEFFERNAN**—The investment vehicles are after the capital growth in the value of water and the trading—the tenant farming situation—is the annual cash flow for the investment vehicle. The only way they can get a cash flow is to screw a margin out of you.

**Mr Shillabeer**—But you will find that the average grower will not pay anymore than a certain figure for his water because it is not viable. So why would they go out and pay—

**Senator HEFFERNAN**—That is all part of the market. If someone can grow grapes and you are growing cow pasture, obviously the grape bloke is going to pay—

**Mr Shillabeer**—A bit more.

**Senator HEFFERNAN**—Yes.

**Mr Shillabeer**—That controls the level of water to a certain degree. You can hold as much water on a holding licence as you like.

**Senator HEFFERNAN**—You are not worried about the transfer of wealth from rural areas to bank vaults?

**Mr Shillabeer**—I cannot really see that that would happen because I cannot see that any businessman would buy up heaps of water unless he knew he had a market to lease it out to.

**Senator HEFFERNAN**—You do not understand the capital appreciation in the value of water?

**Mr Shillabeer**—I do.

**Senator HEFFERNAN**—There was a bloke on *Four Corners* six months ago who got into trouble. The bank said to him, ‘Shit, son, sell off your water and you can get it back some other time.’ He will never get it back.

**Mr Shillabeer**—No, he probably will not.

**Senator HEFFERNAN**—That is what I mean by transfer of wealth.

**Mr Shillabeer**—I understand where you are coming from, but I still cannot see the point of anybody sitting on a lot of water if nobody wants to use it.

**Senator HEFFERNAN**—That is not the point, from where I sit. It is just a matter of how much they can get for it.

**Mr Shillabeer**—How can they get a lot of money for water if nobody can use it viably?

**Senator HEFFERNAN**—You have a system in South Australia where all your water is high-security water. Up river in New South Wales there are people who are losing 40, 50 and up to 85 per cent of their water access rights.

**Mr Shillabeer**—I understand that.

**Senator HEFFERNAN**—They are the people that the speculators will sell the water to.

**Mr Shillabeer**—But would they buy the water? Would you buy the water if you were one of those people?

**Senator HEFFERNAN**—If you are growing cotton you can afford to pay a fair bit for your water.

**Mr Shillabeer**—You can only pay a certain amount.

**Senator HEFFERNAN**—Yes.

**Mr Shillabeer**—That is the point I am making, that would be controlled by the viability of the operation that is trying to buy the water.

**Mr Zadow**—I think that is one of the outcomes that people are coming to grips with a little. The fact is that your crop value is going to determine how much you are prepared to pay for the water.

**Senator HEFFERNAN**—Yes, that is the market at work, but there is a transfer of wealth off the farm when you have paper trading in water.

**Senator BUCKLAND**—If we can move away from that a bit, I am not too sure that you mentioned how long you had both been on properties on the lower part of the Murray.

**Mr Shillabeer**—I am the new kid on the block: I have been there for 12 years.

**Mr Zadow**—Our farm has been in the family for 100 years next year, but we have been irrigating only for 15 years. We were broadacre.

**Senator BUCKLAND**—What interests me is the river flows. Do you look at the river flows as being important to what is happening?

**Mr Shillabeer**—Most definitely.

**Mr Zadow**—Yes.

**Senator BUCKLAND**—Lake Alexandrina—and, I think, Lake Albert also—quite regularly gets reported as having blue-green algae. That must concern you.

**Mr Shillabeer**—It does.

**Mr Zadow**—Certainly does.

**Senator BUCKLAND**—What are your views about that? If people were not using water upstream, you would get higher flows where you are. Do you see that having an impact on you at all?

**Mr Zadow**—It certainly does. We were just talking about that coming up here. The entitlement that we receive in South Australia is, in real terms, only about 95 per cent of the actual water we need to be able to have 100 per cent allocations, let us say. If you look at a chart from when we had our cap imposed back in 1969, our water usage over the last 35 years has

been pretty well on a level field, apart from the small amount of water that may have been bought permanently from interstate into this state. The only way we have been able to expand our industry has been through efficiency, which is related back to the amount of dollars per megalitre that is produced in comparisons with the states. But if you have a look at New South Wales and Victoria water usages you will see that the graph has quite a sharp upward trend.

**Senator BUCKLAND**—I imagine some of the efficiencies you refer to would have cost quite a bit of money.

**Mr Zadow**—There are a lot of things you need to tie in.

**Senator BUCKLAND**—If you have a crop of potatoes in, you need X litres of water to get the crop to grow. I can understand all that; I can put that in my small mind and work it over. But if you were to become more efficient, one of the efficiencies would be better use of the water, and to get better use of the water you would need different watering systems, which would have needed reasonable capital investment.

**Mr Zadow**—Yes. I can talk only about my own experiences. I actually have two centre pivots, which are probably as efficient a way of watering as you can get in modern times. Other industries near us, over in our local citrus area, started off with the old furrow system, then went to the overhead system, then went to the under-the-tree system and are now on a drip system. So there has been a long progression of efficiency improvements that would have cost a lot of money to change from one to the other over a period of, let us say, 30-odd years. Of course, the other part of the theory is that pretty well every primary industry, I would say, has the same problem: that 30 years ago you could probably live quite comfortably on 20 acres of potatoes; now you need 40 acres of potatoes or 100 acres of potatoes. It has become a case of having to get bigger to remain where you are, almost.

What has happened is that you have needed to become more efficient with the water you are using, because the water that you were using, for example, 35 years ago on 20 acres of potatoes would now probably need to stretch over 100 acres of potatoes for you to receive the same value of crop in relative terms. It has almost been a forced issue on that aspect as well. Apart from becoming more efficient, if you just have a block of water and if you do not spend another lot of money to buy more water, you need to use your block of water better just to keep your farm viable.

**Senator BUCKLAND**—Does water quality come into all this? Can you just pump water on, and it does not matter whether it is good water or bad water?

**Mr Zadow**—Quality is a big issue, certainly down river.

**Mr Shillabeer**—Quality is a huge issue.

**Senator BUCKLAND**—I have been in South Australia only 34 years. In my early days here I can remember seeing the River Murray regularly in flood, particularly where you cross at Murray Bridge. Has that lack of flooding had an effect on the quality of the crops you are able to grow?

**Mr Shillabeer**—Since December 2001 there have been no significant flows which have enabled any flushings through the lake systems out through the barrages, apart from the minor event of last September-October. There were a couple of hundred gigs through unregulated flow because of the flooding event in the Kiewa and Ovens rivers. Because we have had so many years of only entitlement flow into the state, there has been a compounding effect of the salinity build-up and the quality of the water has been getting worse. Certainly at the bottom end of the river or in the lake systems, we are now dealing with water that is borderline in terms of horticulture. We have trouble making decisions as to whether we should go ahead and plant, because we are not sure of the escalation of that salinity. We have been told that we should not expect to see any more than the entitlement flow—or it may be less than that—this year again. As you come down the river, the drought effects seem to compound in the water quality. The difference in the quality of water from further back up the river—for example, between what Ian and I use—is probably in the vicinity of about 1,200 ECs, and that is not over a huge distance.

**Mr Zadow**—In relation to the quality of the water, where you have a higher salinity you need more water to get that salinity down through the soil so that it does not affect your plants. As a result of the poorer water, you actually need to use more water to achieve the same result.

**Senator BUCKLAND**—I think the likelihood of your needing to lease water or to buy extra water from a water trader for your crops is what we are trying to get at.

**Mr Shillabeer**—Especially in a year of restrictions.

**Senator BUCKLAND**—And the only place you can get that water is from the river. So you would have to go to a water trader to get a higher allocation.

**Senator STEPHENS**—But you would still be pumping poorer quality water, wouldn't you?

**Mr Shillabeer**—That is right; that would not change.

**Mr Zadow**—That does not change.

**Mr Shillabeer**—The only way that could change is if the irrigators in South Australia or in the lower part of the Murray collectively went and bought 1,000 megalitres from New South Wales or Victoria. That water would then flow down the river to us before it was used.

**Senator HEFFERNAN**—Who do you buy your water from—neighbours?

**Mr Shillabeer**—No. New South Wales mainly.

**Senator BUCKLAND**—How is that done—through a trader or with the farmers?

**Mr Shillabeer**—It is done through a broker.

**Senator BUCKLAND**—Are you happy for that to occur?

**Mr Shillabeer**—Certainly—

**Senator HEFFERNAN**—You do not have any choice.

**Mr Shillabeer**—That is true. The water is too expensive at the moment for me to buy on a permanent transfer, so I am still operating on an annual lease.

**Senator BUCKLAND**—That seems to conflict with what you said earlier about not being too concerned about water trading.

**Mr Shillabeer**—I think the question was: ‘Were we concerned about water being taken out of the system by investment credits?’

**Senator BUCKLAND**—I could quite easily set a company up and trade water from my back room at home in Whyalla.

**Mr Shillabeer**—Yes.

**Senator BUCKLAND**—That does not concern you?

**Mr Shillabeer**—Not really, because I do not think you would do it because you would not make any money out of it.

**Senator STEPHENS**—You are at the lower end of the river. Do you still pay the same rate for your water as people further up?

**Mr Shillabeer**—Yes.

**Senator STEPHENS**—Even though the quality is poorer?

**Mr Shillabeer**—Yes.

**Senator STEPHENS**—Do you think that is an issue? Is that something that should be addressed in the trading regimes?

**Mr Zadow**—I would say you would be happy with that, wouldn't you?

**Mr Shillabeer**—From a personal point of view, I would be most happy if we were compensated for the poor quality. But, speaking with my SAMI hat on, I would suggest that irrigators up and down the river from the border to the mouth should generally be treated pretty much the same.

**Senator HEFFERNAN**—How far apart are you two to have that 1,200 parts per million difference?

**Mr Zadow**—I am just past Murray Bridge and Neil is only 100 kilometres away.

**Mr Shillabeer**—I do not think it would be that far away.

**Senator HEFFERNAN**—Is that because there is town water that is pretty saline entering there?

**Mr Shillabeer**—No. The difference is that I am pumping out of Lake Albert and he is pumping out of the river. The issues, as I said in my opening address, for the lakes are a lot different from the issues for the confined river area.

**Senator BUCKLAND**—So water flow becomes even more important in the lake than in the river, because you have a vaster expanse of area and you really only have a channel running through the middle that would be getting the effect of any flow at all?

**Mr Shillabeer**—Yes. I think you would find figures to support this. When the 200 gegalitres was released through the barrages back in September-October last year to mitigate the effects of the unregulated flow into the state, the salinity levels were marginally improved in the Goolwa channel area, which is essentially where the water directly flows, but it made no difference in Lake Albert.

**Senator BUCKLAND**—If it continues on as it is now and there are not increases in water flow through the system, being someone who uses the water for agriculture in the area, what sort of life expectancy could you put on irrigators in the Lake Albert and Lake Alexandrina area?

**Mr Shillabeer**—If we had to contend with entitlement flow only each year then I would possibly have to pull out within two years.

**Senator HEFFERNAN**—Did you appear before the other committee?

**Mr Shillabeer**—Which other committee are we talking about?

**Senator BUCKLAND**—The House of Representatives committee.

**Mr Shillabeer**—No.

**Senator HEFFERNAN**—Perhaps you should have. They think everything is a joke.

**Senator BUCKLAND**—Just so that I have this clear, and I think I understood what you said: unless South Australia gets greater than its entitlement flow, within two years it will become unsustainable for farming?

**Mr Shillabeer**—Not to farm, no.

**Senator BUCKLAND**—To irrigate; I beg your pardon.

**Mr Shillabeer**—For horticultural crops. I should be more specific, I suppose. I could probably continue to grow lucerne and there would be vaster operators down there on dairies who would continue to be able to irrigate without great productivity losses. Most horticultural crops would start to suffer. There are about 400 ECs difference between Lake Alexandrina, where I operate from, and Lake Albert. The water in Lake Alexandrina is better quality, obviously, because the flow towards the barrage is more direct. Lake Albert is a landlocked lake

and has only one entry through the narrows. The quality of the water varies greatly. Everybody talks about solving the issue of flow scientifically, but it is pretty basic; it is just flow. In layman's terms: if we had increased flow then our water quality would improve.

**Senator BUCKLAND**—The South Australian government is making reasonably loud and regular submissions to get an increase in its water allocations—not very successfully, sadly, but it is doing that. Has your irrigation group made any submissions to the state government to support what it is doing?

**Mr Shillabeer**—The state government's SA Water has already purchased increased allocations off the river system for Adelaide, which is disconcerting. I would have been much happier if the government were exploring other avenues like storages in the Adelaide Hills areas and in the south to build up their water capacities rather than taking it from the river.

**Senator HEFFERNAN**—Who did they buy it off?

**Mr Zadow**—They bought it off irrigators on the swamps just above Murray Bridge—where the pipeline goes in there at the Murray Bridge area.

**Senator HEFFERNAN**—That is the reclaimed area, is it?

**Mr Zadow**—Yes. They bought all those swamp area waters there. Are you talking about South Australia applying for a bigger entitlement flow or just for SA Water?

**Senator BUCKLAND**—A bigger entitlement flow to come across the border.

**Mr Shillabeer**—That is a different issue. I misunderstood your question, sorry. Certainly any increase in our entitlement flow—

**Senator BUCKLAND**—Have you made submissions—

**Mr Zadow**—No, we have not.

**Senator BUCKLAND**—or approaches to the government to give public support to that process?

**Mr Shillabeer**—We have made submissions to do with storing water for interstate. We had no storage in South Australia in the river system, obviously.

**Senator HEFFERNAN**—But if you get this 500 gigs or whatever it is of environmental flow that would help your long-term survivability.

**Mr Zadow**—It certainly would.

**Mr Shillabeer**—At the end of the day, because that water, if it comes to fruition, is allocated to certain icons in the river—of which one is the lakes, Coorong and Murray mouth, but there are other areas, such as Barmah and Milawa in Victoria, that that water has been allocated to—

just how much of it actually gets down to the bottom end of the river is something that we do not really know. But certainly any increased flow at all has to be of benefit to the river and lakes.

**Mr Zadow**—We have just been extremely lucky this year—with the state of the nation, let us say—that we have got water from Dartmouth and not from Meningie lakes, where a lot of our saline water does come from. Because the Dartmouth water is such high-quality water, that is why we have been really lucky with the quality of the water we have had here in this time of low flow.

**Senator BUCKLAND**—Senator Heffernan raised a question about the House of Representatives committee. You would have heard about the report that was handed down by your own member, Patrick Secker, from that committee. I am not saying that it was Patrick Secker's report. It was his committee. Have you had a look at that report?

**Mr Zadow**—No.

**Senator BUCKLAND**—So you cannot make comment on it?

**Mr Zadow**—Other than that we had a meeting of our committee last week and we are sending a letter to Patrick Secker. We are very concerned with the statement he made. We felt it was detrimental to the irrigation industry here. Given what appears to be the slow movement of any decision that is ever made, we felt that if the \$500 million was spent on perhaps trying to increase the flow that would at least be a start. We do not feel that that is the end of the answer by any means but we cannot see why that aspect would be held up at this time through lack of what they said is scientific knowledge. I do not know the difference between 10 years and 20 years but we just felt it would have been a good start at least. We disagree with it.

**Senator HEFFERNAN**—I think the government disagreed with it generally too.

**Mr Shillabeer**—Yes, the Prime Minister's comment which followed was pretty encouraging—albeit it is going to be a slow process to get it under way. The projections that were given to us last year about the demise of the river were pretty horrific. Had we not had the major rain events that caused that short unregulated flow we would have been in a pretty diabolical situation, especially in the lake area, because we lost the level of the lake to a point of no access to irrigators. We got to a situation in which we started to worry about what we were going to do for stock water—because the whole Narrung Peninsula relies on water from the lake and there is no mains system in place in that area—not to mention the social repercussions throughout the township of Meningie and surrounding areas. So I think that we were pretty lucky that we got the flow and did not get projected into those events, because that would have been a disaster. People tend to forget that pretty quickly. The point I am making is that any flow that can be given to South Australia, even if it is tagged environmental flow, and comes across the border has to be of great benefit to the state.

**Mr Zadow**—Probably the biggest conclusion that was drawn was that when the cap began in, I think, 1969 they quite significantly underestimated the losses to the river through evaporation and other things. They estimated some 600 or 700 gigalitres and in fact it looks like 1,100 or 1,200.

**Senator HEFFERNAN**—A lot has happened since then. The 2020 plantations are going to take 1,000 gigs. The Snowy fires last year are going to take 600 net or 1,000 gross. A whole lot of water is going to disappear from the 1969 figure.

**Mr Shillabeer**—Ian is talking specifically about South Australia.

**Senator HEFFERNAN**—But at the end of the day, if people over the border are going to lose perhaps half their entitlement they are going to look over the border and say: ‘What about those buggers down there? Why are we losing half when they’re losing nothing?’

**Mr Shillabeer**—Are you aware that out of the 1,850 gigalitres of water that comes into South Australia annually under entitlement flow only, irrigators only use about 660 gigalitres?

**Senator HEFFERNAN**—Which is almost making out a case for New South Wales—use it or lose it.

**Mr Shillabeer**—The losses need to be addressed. We know, for example, that there are probably 700 gigalitres lost in evaporation from the lakes and rivers surface area, which is a significant amount; but nobody can really account for what has happened to the other 500 or 600 gigalitres of water.

**Senator HEFFERNAN**—Have you got any idea of the figures for what the aquifer contributes to the flow of the river in South Australia?

**Mr Shillabeer**—No, not really. The salt interception schemes that have been in place upriver—they have just commissioned a new one at Bookpurnong which you are probably aware of—initially took reasonable volumes of water but, because they have been able to get on top of the salt situation, they have been diminished in recent years. I really do not have much idea except that efficient irrigation, as you might have just pointed out, does stem the flow of water back into the river.

**Senator HEFFERNAN**—That is right. Have you participated in the River Murray Catchment Water Management Board irrigation efficiency project?

**Mr Shillabeer**—We have. All irrigators are now obliged to do what they call an annual efficiency report, which each irrigator should have participated in for the first time this recent year. That places an obligation on irrigators to be 85 per cent efficient in what they do. Ideas have been touted that if we cannot be efficient then—

**Senator HEFFERNAN**—How do you work out whether you are 85 per cent efficient—what does that mean?

**Mr Shillabeer**—It is about water usage balanced with crop usage. If, hypothetically, you have a crop that uses five gigalitres of water per hectare and you are putting on seven gigalitres of water per hectare, you are totally inefficient. We are given the figures on crop usage and then we relate that to our actual usage.

**Senator HEFFERNAN**—You are given some sort of benchmark figure to work with?

**Mr Shillabeer**—Yes.

**Mr Zadow**—It includes local rainfall.

**Senator STEPHENS**—Does it take into account soil type, the actual productivity and things like that?

**Mr Shillabeer**—No, the soil types are the flaw in the whole system at this stage.

**Mr Zadow**—It is supposed to be implemented and everybody is supposed to be 85 per cent efficient by 2005. But that is not going to happen because they started the project later than they initially thought they would.

**Senator HEFFERNAN**—Have they identified soil types which you really should not be irrigating? Let me explain a little. Up in the Coleambally irrigation area the water was going straight through the soil in which the rice growers were growing some of their rice, so they have had to take that out of production. Has anything like that happened here?

**Mr Shillabeer**—The catchment board have delved into a plan of zoning, which has not come too far down the track yet. In zoning they talk about identifying higher salinity impact areas which are related to soil structure. The idea, of course, is to try to restrict development in those high-impact areas.

**Senator HEFFERNAN**—Are there crop types that you grew 20 years ago but you would not grow today because the sums do not add up with irrigation?

**Mr Shillabeer**—Rice—excuse my mirth. Yes, there are certain crops now that you would have to look at pretty closely as to their viability.

**Senator HEFFERNAN**—Those fellows who operate on reclaimed land and who do not meter their water but have an allocation—

**Mr Shillabeer**—They have a volumetric allocation which is calculated by the depth of water placed on a specific area at any given time.

**Senator HEFFERNAN**—That is a corny way of measuring water.

**Mr Shillabeer**—It is, and that is all changing now.

**Mr Zadow**—It has been almost a debacle, I would suggest, simply because the industry has been put at absolute risk over a 10-year period through the transfer from government owned swamps to privately owned land. It has taken the government—of various persuasions, not just the present one—10 years. They could not even agree on what sort of meter to put in. Most dairy farmers—and I must say generally—are faced with about a half a million dollar cost to rehabilitate their swamps, which generally means laser levelling so that they can put on a measured amount much more accurately than they could on an unlevel surface. Then the year before last there was a huge drought and last year they were placed in the position of paying twice as much for their feed. Then, on top of that, they were put onto restrictions with water. In

instances where they did not have meters they could water something like 11 times instead of 14 times—and that is how they sort of got around the restrictions there. Lately they have had a 15 cent drop in the price of milk.

The drop in the price of milk and the drought are things that come and go when you are in the industry. You live with those but, as far as the transfer of the land and its rehabilitation is concerned, it has all got too much for them. That is why people have suddenly seen the price of water skyrocket through the restrictions, have said that they have just had enough and are selling their water. Really what is happening is that dairy farmers, instead of having a business to sell which could realise the same sort of result, have sold the water and have retired the business. As far as the state is concerned, the economy is the one that suffers.

**Senator HEFFERNAN**—Have you any idea what sort of volume of water is involved? Is it 50 gigs or five gigs?

**Mr Zadow**—There is a figure. It is around 100.

**Mr Shillabeer**—I think the figure is 110 or something like that.

**Senator HEFFERNAN**—Thanks for that.

**Mr Zadow**—Just down from where we are there are dairy farmers. Two dairy farmers have had their boys come home to the farm. One has just got a job in the local council and the other is doing a bit of carpentry, which he was doing before he came back home. Once you take out that grassroots, ingrained farmer aspect you loose them to the industry. In the end you have nobody to take over. From my perspective anyway, that is the biggest worry we have with the management of the water—governments need to have a feel for how the whole thing works.

**Senator HEFFERNAN**—In other words, they need to calculate the social impact.

**Mr Zadow**—They do. The irrigation industry along the river accounts for more than 50 per cent of the employment. The towns along the river are quite viable simply because of the water issue. The social impact will be enormous if the rest of the irrigation industry is handled as the dairy industry has been. It is quite shameful, really.

**Senator HEFFERNAN**—Theoretically, if I am the Shah of Iran or the biggest gangster in Chicago and I have a billion dollars to invest in a safe haven, then if I come to South Australia and buy \$200 million of water and decide to set up something up the river in New South Wales or Victoria there is nothing to stop me, is there?

**Mr Shillabeer**—You would have the company securities department starting to look at something like that.

**Senator HEFFERNAN**—Just say I am the Bank of England.

**Mr Shillabeer**—The short answer is no.

**Senator HEFFERNAN**—Which is why I am concerned that you are not concerned about the water trade. I will leave it at that. Thank you.

**Mr Shillabeer**—I understand where you are coming from.

**Senator HEFFERNAN**—They could start to trade water up the river for whatever reason—they might decide to grow a crop up there that you cannot grow. It might be worth five times what you can grow.

**Mr Shillabeer**—In the first instance if that detracted from the commission's allocation of entitlement in South Australia it would not be allowed to happen.

**Senator HEFFERNAN**—It can flow in and be traded out.

**Mr Shillabeer**—The flow in has no relativity to the trading out.

**Senator HEFFERNAN**—Are you saying that you can only trade out above the minimum—the 1,800 gigs?

**Mr Shillabeer**—No. South Australia receives 1,850 gegalitres entitlement flow annually. If you came along with plenty of money and you bought 1,000 gegalitres out of South Australia and took it to New South Wales, South Australia would still get 1,850 gegalitres of water across the border.

**Senator HEFFERNAN**—If that happened the sums would quickly not add up.

**Mr Shillabeer**—Yes they would because that water is still held with the total allocation of the river system.

**Senator HEFFERNAN**—Suppose I came down here and bought half the allocation belonging to South Australia for whatever reason—this is seriously hypothetical—and decide to move it up the river. You are saying that the river would then be obliged to fill up that 900 gegalitres with other water.

**Mr Shillabeer**—The entitlement flow into South Australia should not change because of trade.

**Senator HEFFERNAN**—It would. It would have to because if the water ain't there, mate, the water ain't there.

**Mr Shillabeer**—That is true.

**Senator HEFFERNAN**—So why aren't you worried about it?

**CHAIR**—He is now!

**Mr Shillabeer**—I do not think that any business would do that in the first instance. I cannot see how they would make money out of it.

**Senator HEFFERNAN**—I can give you the categorical assurance that all around the world that is happening. It is the capital value safe haven status of the asset.

**Mr Shillabeer**—I know it is happening in Turkey. They have dammed up the water.

**Senator HEFFERNAN**—It is happening everywhere. You ought to be acutely aware of it.

**Mr Shillabeer**—We are aware of those sorts of things.

**CHAIR**—Thank you, Mr Shillabeer and Mr Zadow, for appearing today and providing assistance to the committee.

**Mr Shillabeer**—Thank you.

**Senator HEFFERNAN**—No worries. Pray for rain.

**Mr Shillabeer**—We certainly will—and fast political happenings.

[3.10 p.m.]

**MADER, Mr Trent Bruce, Executive Director, Riverland Development Corporation Inc.**

**CHAIR**—Welcome. I invite you to make some opening remarks before we go to questions. Do you have anything to add with regard to the capacity in which you appear?

**Mr Mader**—I am also representing the Riverland local governments of Berri-Barmera, Loxton-Waikerie and Renmark-Parinya. It is difficult in these sorts of situations to encapsulate what you would like to say about the river, because it is obviously a topic dear to our hearts. I thought I would keep it to an opening comment, because I would like to also make some comments following on from some of the discussion that occurred prior to my presentation. I am representing the Riverland Development Corporation, which is the regional economic development board for the Riverland region. It covers those three council areas. I have been involved in the RDC for 13 to 14 years, so I have seen a lot of changes in both river management and the local economy. The RDC's role is as an economic development board, but in a region like Riverland obviously water resources are key to that. The RDC has had involvement in irrigation rehabilitation, which is the changeover from the channel system to the pipe system; development attraction of new horticulture; irrigation improvements, in on-farm irrigation use as well as in the delivery system; and, more recently, salinity zoning with state government departments, which relates to the question asked earlier about zones and things like that.

If I wanted to leave one simple message about what I have learnt over that period, it would be that environmental and water resource management and economic development are not mutually exclusive but actually complementary objectives, particularly in a region like this. The Riverland environmentally is a very sensitive area. The hydrogeology of this area—and I am not an expert in this field—means that we have always had to live with extremes with respect to water resource management issues. I would argue that because of that local communities have a very strong environmental inclination. We have found that, when we have been looking for further development and things like that, we have growers here who are quite happy to leave the water resources they own and could use to flow down the river rather than make an economic gain out of them because of their environmental feelings. I think that is one thing that a lot of people who come from outside of the region need to understand. When we do economic development in the Riverland, we are always very aware of the environmental issues that also attach to that.

You are probably well aware of these two recent reports. If you have not seen the report *Investment trends in the lower Murray-Darling Basin* by the Bureau of Transport and Regional Economics, I would recommend it. It is one of the best reports I have seen, and in 14 years I have seen a lot of reports. You may have different opinions of it. It gives a good comparison of different irrigation areas, and it picks out some differences within the Riverland and some impacts that other reports have missed out. One thing it mentioned was the concept of sovereign risk, and I think previous speakers talked about government responsibilities in making decisions about the river. There was a period when the Riverland was considered the basket case of regional economies. We had an unemployment level well above 16 per cent and an economy that was very stagnant. In the last decade we have doubled the value of production in the area without using any more water. Our unemployment rate is now below the state average. Our

mean annual income, whilst still below the national average, has increased faster than the national average. The local economy has dramatically turned around. Another report on regional economics rated us the 23rd fastest-growing area in Australia, in fact in front of Adelaide.

So we have gone from being a region that was considered a basket case economically to one that is now one of the fastest growing, and we have been able to do that and still have an environment conscience in the way we have used our water. That is the message that I want to pass on, particularly in the eastern states for regions that have not had the benefit of irrigation rehabilitation, which we have had, and an investment of well over \$100 million from state and federal governments into our irrigation systems. When people look at those hard decisions about water usage, who gets the water and how it is used, you can enter into endless arguments about this or that many gigalitres and whether this goes to here or to there. What I would like to pass on is that, to do what we have done, you need to have an equal investment in the communities involved.

One of the other reports I would like to table is a reference to the Riverland Rural Partnership Program, which was a \$5 million federal government program we ran in the Riverland that looked at export market development, quality assurance and on-farm irrigation management. Those sorts of programs, combined with the investment in irrigation rehabilitation, meant that this region was better able to adjust to those issues that we have faced in terms of our water usage. When you look at other regions of the state and also at our region, because we have to continue to improve our water management, remember that it is not a situation of just dealing with the environmental issue. You also have to deal with the economic and social issues associated with those, and they require an investment. In this area, for example, rehabilitation was done on a 40-40-20 split between federal, state and local contributions. You have probably got all this background, but that is how that was done. What that meant was that the investment on farm by the growers was multiplied manyfold and enabled people to actually deal with the issues that they were facing.

I am happy to answer questions and I think that is probably the better way to take this from here. But can I just say that there is a key message. We deal with interstate economic development boards and with local growers who are coming to grips with some of the tougher restrictions that are being placed on them now, and the key message, particularly at this crucial stage of the water resource issue, is that we can actually grow our regional economies and still look after the river only if we are prepared to make an investment in it instead of always looking for an easy way of just balancing the books. That is what it requires. If you do that, you actually get an economy that can continue to employ, continue to prosper and actually do better than it is doing now. But it requires an investment, just as any business does.

**CHAIR**—I know that Senator Heffernan is probably champing at the bit to engage in a discussion but we will start with Senator Buckland.

**Senator BUCKLAND**—Can we just look at some of the issues we have not really addressed this morning. We are going to go through the tradability of water again, and I am sure Senator Heffernan will take us there more eloquently than I, but I want to look at some of the social issues. The development boards do look at those, to my knowledge. If a farm goes out of business or closes because it has sold its water allocation—say the farmer has decided to retire

so he sells the water off but hangs onto the land for a while—what impact does that have on the local economy? Is that being categorised or itemised at the moment?

**Mr Mader**—It can be. Within this state, there is a requirement now to have economic impact assessments on state government decisions. One of the issues with water zoning and things like that—it has only been introduced recently—is trying to get that put into water resource issues. Tradability of water is quite an interesting area of activity. Tradability for—

**Senator BUCKLAND**—Before you go on with that, just so I am clear—I was not going to go there, but I would like to if you want to—do you have knowledge of and input into water trading?

**Mr Mader**—In some ways, yes. The ownership of water in South Australia is fairly secure—there is a licence arrangement. There are all sorts of combinations. For example, water licences for the Central Irrigation Trust—which is the old state government areas—are owned by each of the trusts and collectively by the Central Irrigation Trust. You can trade your water, but you are allowed to trade only two per cent out of the system at any one time. The reason behind that is that, if you have a massive irrigation infrastructure, you do not want everyone trading their water at the same time. The dairy farms are in a different situation: each person is a private diverter.

Studies have been done on the economic impact of water trades and the issues are starting to be understood. As I understand it, there have been more water trades for temporary water upstream. Water trading is not universal. When it was first introduced, similar areas were able to trade. We traded with Sunraysia—they grow grapes and we grow grapes. There is an issue when there is water trading between areas of dissimilar economic use. The report from the Bureau of Transport and Regional Economics talks about security and sovereignty risk—that is the security of water entitlement. South Australia might only divert, say, five per cent of the water from the river but we have had very secure allocations, where there is almost a perceived right to that water—and that is another debate. So water trading is not easy between dissimilar licence arrangements, and I think more work will be done on the economic impact of water trading. Often in our area, people buy farms and trade water with themselves every year on a temporary basis because they cannot trade it permanently. So there is quite a lot of interesting movement in water trading. It is one of those areas that in a decade's time we will probably understand what was happening.

**Senator BUCKLAND**—You think in a decade's time we will understand what was happening? Do you think that, unless there are measures taken now to get some control and regulation into the practice, that could be a devastating reflection?

**Mr Mader**—I am not sure. From a Riverland perspective, I am always immensely proud of the businesses we have in our area. I think in a level situation we will always do better. Recently, when I was giving a presentation to a group of steel manufacturers who sold metal across Australia, I was espousing the same thing—that our value of production had doubled in the last six years and that unemployment had decreased—and someone stood up and said, 'Yes, but you raped the river.' I asked whether they understood that we have actually done that without a water increase, that we have actually improved our irrigation efficiency, and answered some of those questions. But one of the things I have learned is that you cannot assume that everyone understands where you are coming from, from an environmental perspective.

Irrigation industries and communities need to put their case very strongly. In a largely urban Australia, where the issue of water resources is about whether they can water their lawn or wash their car, we need to put a stronger case that regional communities are good custodians of the natural resource, that we actually care for it and that we are getting the best economic benefit out of it. In the years to come, as I argue, people in South Australia will say, 'Wine grapes produce 100 times what rice can for the litre of water,' or whatever the figure is, but then you can say, 'Well, the rice industry is actually bigger than the wine industry,' or that the cotton industry is bigger than the wine industry, or there are more growers. You have to have sympathy for all those communities that live along the same river system.

What I was trying to say in the introduction is that we could teach some of the lessons we have learnt in the Riverland to other communities and say: 'You can have your cake and eat it too. You can use this resource in an environmentally friendly way and do better economically than you are now.' That is the real message, particularly as things get tougher and some water allocations are taken away or usage is changed. You need to offer them an opportunity as well as saying we are going to do this.

**Senator BUCKLAND**—Do you get many invitations to do that?

**Mr Mader**—Whenever we can when we go to the eastern states. I have been very pleasantly surprised. For example, the rice growers held their annual conference in the Riverland. That is a pretty gutsy move from the rice growers' point of view. Organisations like the Murray-Darling Basin Association and others have done more of it than we have but we certainly do work with them. We tend to deal with ones that are closer, which are Sunraysia, which have similar sorts of economies. I think there is more opportunity to do more in other areas. One thing I have always found is that regional communities certainly have a feeling for their resource—the good ones do anyway.

**Senator HEFFERNAN**—Do you think there is room in the market for water speculators?

**Mr Mader**—There are already water speculators in the market, and there will be. In the example that you put, there are other restrictions apart from price and the ability to purchase that would make that a difficult situation. It is one of those debates about the free market—and we are having it over telecommunications, power and a range of other resources—

**Senator HEFFERNAN**—NAB, Mike Carroll or someone like that will argue you cannot have a deep market unless you have speculators in the market. I do not agree with that.

**Mr Mader**—Economics 101 talks about a perfect market and then in year 2 they tell you that there is no such thing and in year 3 they tell you that there is no such thing as what they taught you in year 2. Unfortunately, in economics they never tell you what the reality is. I suggest that the market is not a perfect market and that there will be speculation. But I do not think that a pure market model would work for water resources because there is not a free flow of market information, nor can you trade one form of water for another form of water down a delivery system. Speculation is one of the things that you can allow, but I still think there is a role for government and a role for a form of regulation.

**Senator HEFFERNAN**—We have come a long way with this debate because 18 months ago it was a very lonely thing to say what I have just said today. I went to the NFF conference and one or two other forums and said, ‘Hands up all the people in the room who know what a nationally traded water right is.’ Most people did not know what I was talking about.

**Mr Mader**—There has been some work done on a nationally traded water right.

**Senator HEFFERNAN**—Do you know what it is?

**Mr Mader**—I know what the concept might be.

**Senator HEFFERNAN**—What is the concept?

**Mr Mader**—That you have a uniform tradable water right, a right to water. There was a study done on what a water right would be, and the variation on what it actually is is quite dramatic.

**Senator HEFFERNAN**—In your view, does a nationally traded water right mean that what happens in the Kimberley applies to the Murray?

**Mr Mader**—I guess that is the point I made. The system does not allow for perfect tradability—I am just trying to think of a commodity that is similar.

**Senator HEFFERNAN**—Eighteen months ago all the investment vehicles and the banks thought this was a wonderful new river of gold.

**Mr Mader**—Prior to my recent career in regional development I spent 10 years trading currencies for various international banks. Any new market instrument is always an opportunity for banks, and that is what they do. Whether it has any reality in terms of the real world is largely irrelevant. But I think water trade is one of those issues where there is not such a thing as a uniform right, so it is not as easy as, say, an option on foreign currency where you have—

**Senator HEFFERNAN**—Yes, it is not like a truckload of wheat. You cannot send it over and bring it back.

**Mr Mader**—Yes. I think with the concept of tradability we will head towards more tradable water—

**Senator HEFFERNAN**—We have a reasonably tradable commodity now between users.

**Mr Mader**—That is right, and I think that will improve and similarities of licensing and types of water will merge together. That is another issue: in South Australia people thought they had a water right, and all of a sudden there is a water restriction. The right was not as much of a right as they thought. So there are a lot of things that change. Five years ago in the Riverland we were talking about taking more water out of the river because we had had several years of good flow. We were talking about recharging aquifers. That was the whole emphasis. Now we have a significant drought Australia wide and people are moving the other way. I think we still have a long way to go in terms of actually understanding our water resource and having a uniform approach.

I think the key thing, from an economic development point of view, about water rights is that we need to recognise that when these things are discussed the discussion itself has an impact on investment. One of the things that the Bureau of Transport and Regional Economics report talked about was the concept of sovereign risk. For example, one of the issues we faced when water restrictions came in was that banks said, 'Maybe we won't invest as much in irrigation areas and things like that because we don't know whether they've got the rights.' The point is that all the discussions we have and the government have about these issues have an impact on investment. So we need to seek clarity and transparency. It does not matter which way we end up going, but clarity and transparency are important in what we do so that banks can actually understand what they are dealing with.

**Senator HEFFERNAN**—So, to answer my question, do you think there is room in the market for speculators?

**Mr Mader**—Yes, I think there will be speculation. If you start a market—

**Senator HEFFERNAN**—No, that is not what I am asking. You are saying that there will be; but is there room?

**Mr Mader**—Speculation in the sense that people buy—

**Senator HEFFERNAN**—What I am talking about are paper water licences, or bankable water licences. You can keep those in a bank vault. The banks argue that to have a full and deep market—

**Mr Mader**—In the sense that you are suggesting where it is a paper trade, I do not think that is where it is able to go to. But speculation in the sense of whether people who do not actually have a need for water will buy and sell water; yes, they will. In the Riverland people are now buying water that they do not think they will use because if they are going to invest, say, \$1 million in new viticulture—and this is not a big grower—they want to know that when there are water restrictions they have more water than they will ever use. Most growers in the Riverland now would be holding more water than they will ever use, and they are quite happy to see it go down the river.

**Senator HEFFERNAN**—And that comes out of the 1,800 gigalitres?

**Mr Mader**—Yes.

**Senator HEFFERNAN**—Does that mean that the 1,800 gigs is very generous?

**Mr Mader**—Not all of that 1,800 gigs goes to irrigation.

**Senator HEFFERNAN**—But is that a reasonable situation where there is that much water in South Australia that blokes can buy surplus water knowing that they do not need it and it is just an insurance policy when further up the river there are people who are losing 50 per cent of their water?

**Mr Mader**—It depends on the water that they have actually bought and what sort of licence they have. For example, if you look at the investment that occurs in rice or even vegetables in this area, they purchase a water right that is actually temporary. So their actual economy is based on water that they may get some years and that they might not get in other years. That is how they have actually structured their business model whereas here—

**Senator HEFFERNAN**—You are talking about permanent traded water though, aren't you?

**Mr Mader**—No, that is water allocation.

**Senator HEFFERNAN**—But where a guy has more water than he needs, why would he buy it temporarily and then chuck it down the river if he does not need it? Why would he spend that money that year?

**Mr Mader**—Because he wants to make sure that, even when a water restriction comes in where he is told that he has to cut back his water entitlement by 20 per cent, he actually still has enough to keep going.

**Senator HEFFERNAN**—I understand that. But why would you do it in anticipation of that instead of when it actually happens? Is that because it is cheaper?

**Mr Mader**—Because the water that you buy might be worth, say, \$200,000 and your crop might be worth \$2 million. If you cannot rely on the government to provide you with the water that your entitlement says you deserve then you make an investment decision.

**Senator HEFFERNAN**—At the beginning of the season you would have a reasonable idea how much water is in the system unless there is a huge summer flow.

**Mr Mader**—The point is that, if you have a vineyard that takes three years to get to production, you cannot go season by season. The economies that work on rice and vegetables work on water entitlements that enable growers to take water when there is a certain flow.

**Senator HEFFERNAN**—An annual crop.

**Mr Mader**—Their regional economies are based on big plantings when there is water and smaller plantings when there is no water. When they have a period of drought, they are in deep trouble because they have a few years when they cannot plant. If you are planting almonds which have a lead time of, say, four to seven years, you have to make sure you can get a water allocation. You will do anything, including paying more for the water than anyone else, to make sure you have a water allocation.

**Senator HEFFERNAN**—But you are saying that on a traded basis such as a temporary transfer and not on a permanent basis?

**Mr Mader**—Yes, some people buy the water and, if they do not need it that year, they will trade it out—lease it to someone else.

**Senator HEFFERNAN**—But there are people who do not do that—they have an orchard and are thinking: ‘In five years time I am going to need X amount of water. I had better start buying the temporary transfer now so I’ll have it in five years time.’ Is that what you are saying?

**Mr Mader**—No, they try and purchase a permanent water allocation.

**Senator HEFFERNAN**—I could not figure out why they would do it on a temporary basis.

**Mr Mader**—They do it on a permanent basis.

**Senator HEFFERNAN**—That is the water that sometimes flows down the river?

**Mr Mader**—Yes. Several years ago, before the current drought, we had a situation where a large investor came into the area and wanted to buy water. At that stage, the Central Irrigation Trust had significant amounts of water that were surplus and they wanted to lease them for 10 years to these new developers. It would have been about a \$40 million investment. Growers sat down in a room as a group and said: ‘No, rather than make money and reduce our costs, we will hold that water because we don’t want to take the risk. We will hold water and not use it.’ That is a resource management decision that they are entitled to make. In hindsight, they probably made the right decision.

**Senator HEFFERNAN**—They could have temporarily traded that water every year.

**Mr Mader**—Yes, and they may have traded some of it temporarily but they were not prepared to let it go for 10 or 20 years.

**Senator HEFFERNAN**—Permanently, neither would I. But I would be a mug if I did not trade it annually.

**Mr Mader**—Exactly. We were talking about speculation in the water market and that is why you need—

**Senator HEFFERNAN**—That is not what I am talking about in terms of speculation; I am talking about holding water out of the market until you really need it and will pay more.

**Mr Mader**—Yes. That is why there is an involvement—

**Senator HEFFERNAN**—That happened in New South Wales last year.

**Mr Mader**—There needs to be government involvement in this area. You raised the subject of zoning before. We are going through that at the moment, and a salinity zone is being implemented. Based on a modelling of ground conditions and saline movement, a large area of the Riverland is now no longer open for development. We are dealing with that with the Department of Water, Land and Biodiversity Conservation where people have actually purchased land that they thought would be suitable for irrigation development and are now being told that it is not.

**Senator HEFFERNAN**—Is that a buyer beware situation?

**Mr Mader**—It was one of those situations that was brought in on 30 June last year. No-one knew about it, and it happened. Unless you can show intention prior to 30 June last year, you are out. There are some issues about whether people had an opportunity to understand what was going to happen. It is significant. What I am saying is that the Riverland now has a zone that you cannot develop in. You might have a horticultural property and a piece of vacant land next to it but, if it is in the zone, you cannot develop it.

**Senator HEFFERNAN**—Are the existing developments going to be taken out of production?

**Mr Mader**—There will not be existing developments taken out of production, but they might have trouble if they have had a change of crop type or anything where there is a transfer of water. But, again, we are in the process of negotiating all this at the moment. We are in the process of trying to work out whether salt interception schemes are the way to go or whether improved irrigation efficiency is the way to go.

Going back to one of the questions you asked the previous speakers about irrigation efficiency measures, most new significant developments do not rely on guesswork; they have soil moisture probes in the ground that they monitor. Irrigation efficiency is measured by the amount of water that passes through the root zone, and they can monitor this from remote locations, so they can tell whether their plants are using all the water they irrigate with. One of the things the water market and the valuation of water have done is encourage people to be better users of water. I have seen printouts from these reports that suggest there are levels of efficiency where there are very limited amounts of water going past the root zone. That is the way we would like to see the whole irrigation system work—where people monitor the water that goes on and the levels of efficiency are high. In the Riverland we have drainage schemes that run dry. They were put in in the old days when we had flood irrigation. Now we have situations where those drainage schemes have no drainage water to pump out.

**Senator HEFFERNAN**—That in itself, of course, can be a problem for the river.

**Mr Mader**—Yes. One of the issues we faced was with one of our—

**Senator HEFFERNAN**—If you become too efficient with your present allocation you do further damage to the river.

**Mr Mader**—In what sense?

**Senator HEFFERNAN**—Not returning the water.

**Mr Mader**—I saw in the *Advertiser* the concept that drainage water that you take out of the river is good to return to the river after it has been through saline. I could not quite understand that. My thought was that we had better leave it in the river in the first place. The idea of run-off as a form of recharge was a bit obscure, particularly in this area where you have underlying saline.

**Senator HEFFERNAN**—I understand the issue down here, but up there it is different.

**Mr Mader**—Yes, it is. I am not a hydrogeologist but someone once explained it to me. He showed me all the maps of the Riverland and basically the hydrogeology of the whole Murray-Darling Basin system. The water that leaves 10,000 years ago from the eastern states arrives here, does a big plughole circuit right around Waikerie and then dumps itself in the Riverland before the river heads south. When you look at the cliff types and the soil types you can see that. We are basically—and it is not a very attractive concept—the plughole of the river. So we have always had saline outfalls here. I think that is why we are so sensitive about this issue of water resources and perceptions of our use of the water—because we have spent a lot, and the growers here have spent a lot of their own money too, on irrigation rehab. If you look at the report of that rural partnership program you will see that a significant amount of it was going into on-farm improvements in rehabilitation.

**Senator HEFFERNAN**—The rice growers and the cotton growers will tell you the same thing.

**Mr Mader**—And that is true—they have. On the same point, there is still a long way to go. You can still drive through and see—and as a Riverlander you almost cry when you do—open earth channels. It is a long discussion. Only 10 years ago we had the same discussion with our own water resource people and they said, ‘We’ve got a Commonwealth area.’ Loxton was the last to be rehabilitated, because the Commonwealth always tried to sell it to people before. It was with the finance department at that stage. They were always trying to sell it to us before—just to get rid of it, but they always wanted to get a price for it. We told them they had to fix it before they could sell it. When it was transferred to the department that dealt with water resources it was much easier. They had always said that those channels worked perfectly. When they dug up the channels—nice concrete channels, not earthen channels—they found enormous great seepages of water. These were supposed to be channels that would last another 20 years, or so they said. So there is only one system to move water around Australia and that is in a pipe—a closed system. There is no excuse for doing it any other way, from my perspective. It is just so much more efficient.

**Senator HEFFERNAN**—One of the problems with it, though, has always been that they never build into the price of water the refurbishment of the infrastructure.

**Mr Mader**—That is right. That is why, when they did the deal on rehabilitation, they did the 40-40-20 split. What they negotiated with the growers was that some of that water was to go back to the environment and some of it was to be sold on—and that was probably a deal some people disagree with. They did a deal based on their economic performance. The growers, once they were brought on board, were the strongest advocates of that. They sat down and said: ‘What if we pay it off quicker? What if we do this?’ They actually led the charge.

Once the government accepted the concept and said to the growers, ‘This is what will happen,’ the growers took charge of it and said, ‘Let’s do it this way.’ They got ownership of the system in the end, and they got a system that worked. What it meant to them was that they could get water on demand, that they no longer had to fill up the channel, wait for it flow past at a certain time and then watch what they did not use flow out into an empty paddock at the other end. They could actually go onto the Internet, order their water for a particular time on a particular day, and it would arrive; it would be there. They did not need to do anything. Now not only can they do

that but they can also go onto the Internet to find out how their plants are going and see if they are healthy.

**Senator HEFFERNAN**—What is the biggest pipe diameter for these water schemes?

**Mr Mader**—I am not sure how you would measure that, but you can drive a car through some of them.

**Senator HEFFERNAN**—What are their delivery rates and friction life?

**Mr Mader**—I would have to refer to the CIT area. They carry a significant amount. They can move a fair bit of water, but I would not know the exact figures.

**Senator HEFFERNAN**—It has always intrigued me how the Coleambally channel would be put in a pipe, for instance.

**Mr Mader**—Again, without looking at the engineering of that—and it is not an area which I am expert in—

**Senator HEFFERNAN**—Or the Tumut River for that matter.

**Mr Mader**—There have to be ways in which you can more effectively deliver the water.

**Senator HEFFERNAN**—Yes, there is no question about that. That is the way of the future.

**Mr Mader**—But the trick is—as I said in the introduction—that it requires investment. In terms of talking about the problem in the river, the way to tackle it in the community is not to say, ‘We’re going to take away your water resource or your economy is going to go down the tubes,’ but to say, ‘We can actually show you a way where, if you start at the marketing end of your product and look for overseas markets, if you look for products which you can get paid more for, if you look at your quality assurance, if you look at the way you grow your product and if you look at the way you irrigate and do your business, there is actually a better outcome for your regional community.’

**Senator HEFFERNAN**—Which is why I am concerned that, say, over a 50-year snapshot all the water has been traded—the farmers who appeared before the committee this morning said they were not worried about that—and farmers have become tenant water farmers, a lot of the improvements that have to occur do not stop at the end of the delivery channel but have to continue on-farm. I do not know how you will fund that if you remove all the wealth.

**Mr Mader**—When we were an economy that was very poor, we did not have much of an environmental conscience as a community.

**Senator HEFFERNAN**—A Third World country sort of thing.

**Mr Mader**—Yes. You can afford an environmental conscience when you can actually afford better irrigation systems. When you are not making anything, when you have a viticulture program in place and you have grapes or dried fruit that are not required, no-one can encourage

you to put in a drip irrigation system, because you cannot afford one. If you have an economy where you can actually afford to put in a drip irrigation system—and the better the quality of the product, the less water you will use and the less you will need to pay—all those sorts of things flow from it. You can afford an environmental conscience when you are stronger economically. When you deal with water resource issues, you need to deal with economic issues.

**Senator HEFFERNAN**—I take it that you would not be in favour of any water savings going to further creation of irrigation areas?

**Mr Mader**—I think there has to be a trade-off in that area in the sense that, by allowing water efficiency, you can allow further development. That is an economic benefit and that encourages more water efficiency. You have to have an element of that.

**Senator HEFFERNAN**—There needs to be some middle ground.

**Mr Mader**—Yes. If I am growing in the CIT area or in Loxton area, for example, and I have made a water efficiency on farm, then I have the benefit of that and I can trade it. If there is a water efficiency through the delivery system—which, in that instance, would be by far the biggest efficiency—then some of that can go to the environment. That is a sort of public good. The water that never got to anyone because it was just flowing down can go to the environment. When you sit down with your growers and deal with the economic case for rehabilitation, that is the sort of decision that you make then.

**Senator HEFFERNAN**—What do you think we ought to do with the evaporation of Meningie Lake?

**CHAIR**—Before you answer that, I am mindful of the time constraints here. I do want to go to Senator Buckland's questions.

**Senator BUCKLAND**—I am almost sorry I said that I had questions. Senator Heffernan would be more eloquent about water trading. You were here earlier when Mr Shillabeer, a previous witness, was talking about the flow in the river. He saw the flow above the allocated water flow as being essential and he thought that if they did not get that in a couple of years the chance of having a sustainable property down at the end of the river would be very limited. What effect and what economic impact on the River Murray community would a non-additional flow—that is, water above the allocated amount—have on the community?

**Mr Mader**—I think with water allocations and water flows, the trick is in the time of year when it occurs. If the state thought it could be guaranteed its 1,850 gigalitres, that would be a good start. We really start to panic at the thought that that is not necessarily going to be the case, but the issue is also about the time of year, because there has been great debate about the salinity slugs that were going to come down the river. It is not a simple total allocation over a year, it depends on the time of year and when you are irrigating. Someone put to me once that in terms of salinity and things like that in the Riverland we could take higher levels of salinity than most of the consumers in Adelaide because people need lower salinity levels than plants. But the state needs to make sure that it has its 1,850 gigalitres. Certainly the surface flows are a bonus for us. Before you leave the room you will see the photo behind the screen.

**Senator BUCKLAND**—My colleagues will see it.

**Mr Mader**—In terms of the current debate we are having about the river and water management, I live on the river and can say that the water quality has been pretty good. You should have a look at the photo behind the screen. That is what it used to look like in a drought year looking out over the river from this room.

**Senator HEFFERNAN**—But that has nothing to do with the price of fish—because these days you do not have the big peaks.

**Mr Mader**—No, and we have regulated the river.

**Senator HEFFERNAN**—So that is a bullshit argument.

**Mr Mader**—No; I am saying that given the drought we have had—

**Senator HEFFERNAN**—The river used to run dry but that is—

**Mr Mader**—If we have had a 100-year drought and the water quality is still the way it is, it is a significant problem but it is not a totally dire situation. We have come a long way and we need to reflect on that.

**Senator BUCKLAND**—Can we go to that question. What economic impact would it have—because the river is not solely dependent on the fruit and vegetable growing industries; it has a very high reliance on tourism and recreational use.

**Mr Mader**—Yes.

**Senator BUCKLAND**—If you do not get that flow of water above the allocated flow each year, what impact economically would it have on the community?

**Mr Mader**—Tourism in our region is worth approximately \$60 million year. Irrigated horticulture is worth \$560 million a year. The issue with tourism and water flow is quite significant and it goes back to the comment I made about perception of the river. For example, just before coming here I spoke to someone in Adelaide and they were concerned about the river's environment. Houseboat operators get calls to ask whether there is sufficient water in the Riverland to float houseboats on. Water is a significant tourism issue, and it is significant in terms of perception. So the point you make is very good in that there are wider economic and perception issues apart from fruit growing, vegetable growing, the wine industry and so on.

**Senator BUCKLAND**—So it would have an effect on tourism?

**Mr Mader**—If you ask tourists why they come to the Riverland, they say that it is the river. You can call it environmental tourism, ecotourism or venture tourism but it gets back to their enjoyment of the riverine environment. Even though we are developing tourism markets in arid land tourism, it is the river that is the issue. The river has an economic impact on tourism and all the service industries. The entire economy is based on the river. Without the river there would be

a few stations and that would be the sum of the Riverland. It is marginal grazing and cropping land.

**Senator BUCKLAND**—With regard to the effect on aquaculture, it has been suggested—and I am not a good judge of it because I do not catch fish anywhere—that the Murray cod is all but gone in this section of the river in South Australia. Is there any evidence that I am wrong?

**Mr Mader**—Yes, they do catch Murray cod in this area of the river. I smile because this is an area of discussion I have with my father, since we have a long history of catching Murray cod in the area.

**Senator BUCKLAND**—I must come over and visit you.

**Mr Mader**—In fact, they do catch Murray cod in this area. The whole secret of catching Murray cod is one of those things that fishermen talk about ad infinitum. They do still catch them here. If I can quote my father, the issue of Murray cod is more to do with the opening up of some of the backwaters that closed off in the early lock system and in restoring flows within the Murray itself. We worked towards a single channel; it used to be a series of channels. A lot of the salinity problems we now face are because a lot of the little creeks were closed off as part of the development of the river as a main irrigation—and the locks and the things like that. But they certainly continue to catch Murray cod in this area. The water has been clearer in the last few years because we have not had any Darling water. In some areas they have gone back to using spinners and floppies, which was unheard of not so long ago.

**Senator BUCKLAND**—Did you make a submission to the House of Representatives inquiry into the River Murray?

**Mr Mader**—No.

**Senator BUCKLAND**—Have you seen the report?

**Mr Mader**—Yes, I have.

**Senator BUCKLAND**—Do you have any comments on the report—your views on that or the view of your board?

**Mr Mader**—No, we have not come from a board perspective. I think my comments would be reflecting on what I have said today.

**ACTING CHAIR (Senator Heffernan)**—Thank you for your attendance. I hope you get a shower of rain soon.

**Mr Mader**—They are looking for it all over South Australia, actually.

**Committee adjourned at 3.57 p.m.**