



COMMONWEALTH OF AUSTRALIA

## Official Committee Hansard

# HOUSE OF REPRESENTATIVES

STANDING COMMITTEE ON AGRICULTURE, FISHERIES AND  
FORESTRY

**Reference: Future water supplies for Australia's rural industries and communities**

MONDAY, 28 APRIL 2003

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**HOUSE OF REPRESENTATIVES**  
**STANDING COMMITTEE ON AGRICULTURE, FISHERIES AND FORESTRY**

**Monday, 28 April 2003**

**Members:** Mrs Elson (*Chair*), Mr Adams (*Deputy Chair*), Mr Forrest, Mrs Gash, Mrs Ley, Mr Schultz, Mr Secker, Mr Sidebottom, Mr Windsor and Mr Zahra

**Members in attendance:** Mr Adams, Mr Forrest and Mr Windsor

**Terms of reference for the inquiry:**

To inquire into and report on:

The provision of future water supplies for Australia's rural industries and communities, particularly:

- The role of the Commonwealth in ensuring adequate and sustainable supply of water in rural and regional Australia.
- Commonwealth policies and programs in rural and regional Australia that could underpin stability of storage and supply of water for domestic consumption and other purposes.
- The effect of Commonwealth policies and programs on current and future water use in rural Australia.
- Commonwealth policies and programs that could address and balance the competing demands on water resources.
- The adequacy of scientific research on the approaches required for adaptation to climate variability and better weather prediction, including the reliability of forecasting systems and capacity to provide specialist forecasts.

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**Committee met at 8.56 a.m.**

**BURSILL, Professor Donald Bruce, Chief Executive Officer, Cooperative Research Centre for Water Quality and Treatment**

**DAY, Mr Darryl, Regional Water Supplies Leader, Cooperative Research Centre for Water Quality and Treatment**

**ACTING CHAIR (Mr ADAMS)**—I declare open this public hearing of the House of Representatives Standing Committee on Agriculture, Fisheries and Forestry inquiry into future water supplies for Australia's rural industries and communities. Today's hearing is the seventh one for the inquiry. It is part of the committee's program of hearings and visits in different parts of Australia.

I welcome witnesses from the CRC for Water Quality and Treatment. Although the committee does not require the giving of evidence under oath, I advise you that these hearings are formal proceedings of the parliament and consequently warrant the same respect as proceedings of the House itself. I remind you that the giving of false or misleading evidence is a serious matter and may be regarded as contempt of the parliament. Do you wish to make a brief statement in relation to the submission that you have made to the committee?

**Prof. Bursill**—Yes, we would like to do so.

**ACTING CHAIR**—Before you do that, I apologise on behalf of our chairperson, Kay Elson, who could not be with us today. I am the member for Lyons in Tasmania. It is a large rural electorate which covers about 60 per cent of the landmass of Tasmania and has a lot of rivers, dams and water issues.

**Mr FORREST**—I am the member for Mallee, a Victorian seat immediately upstream on the Murray.

**Mr WINDSOR**—My seat of New England is in New South Wales. It contains some dams and has some impact on the Murray-Darling system.

**Prof. Bursill**—Thank you for the opportunity to address and talk to the committee. You have our submission, and I do not propose to refer to it. I will raise a few issues in relation to Australian drinking water guidelines. Our new CRC is in the second year of its second life. We restructured the programs, bringing in the rural and regional program, and Darryl Day will talk about some of the issues there. We also have a sustainability program where we are looking at what the urban communities can do with improved water management, and I will make a couple of comments on that. I will also make some reference to a paper that I was invited to present to the Eighth National Conference of Parliamentary Public Works and Environment Committees, which was held here in Adelaide in early October. I will leave a copy of that with you, although it should be in the *Hansard* record of that process.

**ACTING CHAIR**—We welcome that, thank you.

**Prof. Bursill**—I made reference in the submission to the Australian drinking water guidelines. I chair a coordinating group that keeps the Australian drinking water guidelines

under ongoing review. This is an important process, and I like committees such as this to be aware that it is different from what goes on in other countries such as the United States, where there is a very legalistic approach to water regulation. The scientific process of trying to work out the risk to health of certain water quality issues is tied up in the same process as the licensing and regulatory process. It means that neither one thing nor the other gets done properly. In this country we have guidelines where the scientists and medicos can consider the fairly complex issues relating to health, address them and set a light on the hill about what is safe, good quality drinking water. The generally state based processes that put in place regulations for controlling drinking water quality for urban communities can refer to those things and take into account additional issues such as social, economic and political considerations that may have some special local flavour. It is important that we preserve this process. The Productivity Commission did a review in this area about two or three years ago and tended to favour the sort of legalistic approach of the Americans. We have maintained a debate against that. It is important that we maintain this two-phase process.

To update the submission: at the time we put it in, one of the major changes to the drinking water guidelines was to have written into them a much more prescriptive water quality management framework—a logical, risk based process of managing water from the source, catchment or ground water system through to the treatment and holding processes through to the distribution to the customer. This has been through a very extensive consultation and involvement program right through the country, and that has been completed. Any feedback we got from that was taken on board and presented to the National Health and Medical Research Council a couple of weeks ago. It was passed by that council. The Natural Resources Management Ministerial Council—the water equivalent of the health council—needs to approve these changes before they become the official updated drinking water guidelines. There is a process going on at present to get that done. When the submission went in, that was still out at public consultation, so that part of the process has moved on.

Moving to the CRC structure, I mentioned the rural and regional program. We put that into the second phase of the CRC, recognising that, although our main stakeholders are mostly in the major urban centres, all of the people on our board were keen to see that we use the expertise and resources of our national drinking water research facility, which is how we see ourselves, to assist in water quality management issues for rural and regional Australia. Darryl will highlight some of the things that we are involved in there. On the sustainability side, we recognise that urban water use needs to be improved. There are many challenges there where one could make more effective use of the water resources for urban communities.

One of the issues that is very important is that a major step forward in reducing public health risks has been to separate sewage from people. Over the last hundred years or so, this has probably been the single most important factor in improving public health, even beyond all the advances in medical science. There is a bit of fervour for the idea of reusing effluents of various sorts, and certainly we need to look at how we can do that. But, if we bring the whole lot together with little care for the risks involved, there is a significant risk in my view that we can cause significant health problems. The reuse guidelines in this country have not really been very soundly based on research and knowledge. We want to try and run a somewhat similar process to the Australian drinking water guidelines through the various water reuse areas, whether it be from treated effluent, stormwater or even rainwater tanks.

For example, one of the questions that often comes up is: with the increasing popularity of high-rise accommodation in cities like Sydney and Melbourne, can we collect rainwater from the roofs of these buildings and use it in the building in some way? Rainwater very rarely meets the microbiological requirements of the Australian drinking water guidelines and sometimes does not meet some of the chemical requirements. What do we do about that? If it is circulated, for example, through the hot water system for a certain time, does this eliminate the microbiological risk? This has not been studied properly and is not known. We have to watch out for having the temperature too high because then there is a scalding risk. If you have it too low, there is a legionella problem. There are some serious issues that need to be resolved there, and it is not known what we can do about utilising even rainwater in those situations and maintaining public health.

In relation to the address I gave to the parliamentary conference last year, I want to briefly put some perspective on urban versus irrigation use of water. There is a lot of pressure on improving urban water use, as I have mentioned, and it certainly needs to be pursued. But one also needs to recognise the fact that it depends on the reason you are doing it. For example, there is a bit of a feeling in South Australia that Adelaide needs to conserve water to assist in the environmental flows in the Murray River. The fact is that Adelaide draws less than two per cent of the mean annual flow of the river into South Australia. If you talk about water conservation in Adelaide, it is an insignificant amount. It is less than the errors in measuring the flow at the border. On the other hand, somewhere between 70 and 80 per cent of our water use in this country is through irrigation. I am sure you have been told these sorts of things before. Clearly, if we are going to further develop our agricultural productivity in irrigated fields, the opportunities for extra water will not come from savings in the urban community, nor will the environmental flows in major systems like the Murray-Darling improve because of savings in the urban community. These improvements will have to come from improvements in irrigation water use.

What concerned me greatly was the fact that we need a much clearer national vision for what we want to see regarding our water resources in this country, and the consequent objectives and strategies need to be focused on achieving that vision. It has happened in other places, like the Rhine. The countries in the catchment of the Rhine were at war in the Second World War, but about 30 years later they all decided they wanted to see salmon back in the Rhine. From that iconic objective or vision they worked out a whole lot of water quality outcomes that needed to occur for that to happen. They have systematically worked at it and have achieved that objective now. While they have been doing that over the last 30 years, our management of the Murray-Darling river system has gone downhill and our use of the water has gone up. Of all the irrigation water, 93 per cent is, in one form or another, flood irrigation—technology that has been around since before the pharaohs were building pyramids. Sprinklers only use four per cent, drippers use two per cent and microsprays use one per cent. I know there are improvements going on with irrigation technology, but those broad figures do not engender a great deal of confidence in our move forward.

**ACTING CHAIR**—Has this come from a specific target that you are quoting?

**Prof. Bursill**—Yes. In that paper there is a series of references to these things and, in particular, the water use factors come from an irrigation industry audit. I will hand over to Darryl.

**ACTING CHAIR**—Mr Day, you were going to give us the rural and regional angle of your CRC.

**Mr Day**—Yes. Firstly, I would like to update the committee on the membership of the Cooperative Research Centre for Water Quality and Treatment. Our submission stated that there were 29 members. I am pleased to advise that there are now 30 members. The Centre for Appropriate Technology, which is based in Alice Springs but has offices in Queensland and Western Australia, subsequently joined the CRC. We are delighted with that addition because it further extends the research and technology transfer capabilities of the CRC, especially into the areas of appropriate technology, service delivery, capacity building and consultation with remote area communities, particularly Indigenous communities. I particularly noted that perhaps not too much had been said on that in discussion and in the content of the submissions to date. The Indigenous communities do play a very big part in the rural sector in Australia, and a lot of the issues in relation to water quality, in particular public health, have been a key focus of my particular program in the cooperative research centre.

Secondly, in our submission we referred to the cross-sectoral approach with the National Health and Medical Research Council. We jointly convened a workshop in Alice Springs on 27 and 28 August. I believe our submission was dated 29 August, and the outcomes from that workshop were not available at that time. I have a copy of the workshop report. Whilst there is a lot more work to be done, it has been an excellent start and a lot of very key issues were raised. The workshop started from the premise that access to good quality water and a wholesome supply of good quality water are prerequisites to good public health. That came through quite strongly with a lot of the material presented from the health sector.

In Australia the responsibility for water in regional and rural Australia involves Commonwealth, state and local government agencies as well as local communities. It is absolutely essential that we have effective cross-sectoral collaboration, and I think there is a lot of work to be done in that area. The workshop that I mentioned involved service providers, policy makers, researchers and customers across the water and health sectors. They recognised that there are major health gains to be achieved by improving water quantity, in some cases, and water quality of regional and rural Australia's water supplies.

The collaboration between NHMRC, the CRC for Water Quality and Treatment and other cross-sectoral interests is absolutely critical in addressing key research issues to provide evidence based practice and policy for water in regional and rural Australia. The collaboration in this area that we have started between the NHMRC and the CRC for water quality is proposed to continue and indeed be expanded to include other CRCs, such as the CRC for Aboriginal and Tropical Health and the CRC for desert knowledge, which are both due to commence on 1 July this year.

These issues in improving public health through good, wholesome, reliable water supplies and sanitation are complex and involve technical, social, administrative and economic considerations. I think the key message coming out of Alice Springs was that we do have access to the technology but the application of that technology, the research and the complexity of the issues that are required to be addressed are yet to be dealt with.

One of the other key issues from the workshop was a presentation on the work that has been carried out by the enHealth Council, which is titled 'Rural and remote potable water project risk



assessment'. The Bureau of Rural Sciences Australia has been undertaking a project for enHealth to produce a national inventory of water quality, including chemistry, microbiological and radiological data. The project is looking at the management of water supplies and health significance and has been surveying communities of between 50 and 10,000 people that are more than 50 kilometres from a capital city and have a reticulated water supply. These communities are generally outside of mining centres or centres of major tourism activities.

The project has moved into the second phase and data has been captured. But we have seen that there are huge gaps of data across many water supplies. The project in the second stage is now going through a risk assessment of what the results actually mean. We are seeing that there are many water supplies where we have health parameters in the drinking water guidelines that have not actually been looked at or tested in the water supplies, particularly chemical, health related parameters and radiological parameters. I think it is a priority that that particular project continue to be strongly supported by the Commonwealth.

The third stage of the project envisaged filling the data gaps and having the health risks of those waters understood. We are using many waters throughout regional and rural Australia without a good understanding of what the health risks are. Some of the work that I am familiar with that has been done in the Northern Territory has shown that there is quite a range of chemical parameters that have a health risk element that was not previously understood.

In December 2002 the Prime Minister announced the national research priorities and the associated goals. Those four research priorities were: an environmentally sustainable Australia, of which water is a major component; promoting and maintaining good health—again, where water strongly features; frontier technologies for building and transforming Australian industries—and water has a part to play in that; and safeguarding Australia—and, again, there has been a lot of focus on the security of water systems in that regard. Those four priorities very much align with the focus of the water industry and the interests of the cooperative research centre.

I believe that the way forward is to continue and strengthen the cross-sectoral work that has begun between the health and the water sectors. As Don mentioned, real leadership is required in terms of the vision to take that forward.

**ACTING CHAIR**—Thank you very much, Mr Day. That was interesting. Will you table your paper for us?

**Mr Day**—Yes.

**ACTING CHAIR**—I am interested in the separation and the formation of the drinking water guidelines. Some municipalities in some states around Australia have changed and lifted their guidelines. You have given some emphasis to making sure that there is a different regulatory body setting the standard than those that are enforcing the standard. I think you mentioned the USA and that it does not apply that way in the United States. Would you like to give us a rundown of what happens there?

**Prof. Bursill**—A good example would be the arsenic rule, which has been debated in the States for quite some years. The change in the arsenic guideline was made in what was called the '96 version of the guideline. The actual scientific assessment was done prior to 1993 in

Australia, where we brought the level of arsenic down from 50 micrograms per litre to seven, based on a reassessment of the toxicological risk to public health of that toxic element.

**ACTING CHAIR**—Was that based on World Health Organisation information?

**Prof. Bursill**—On World Health Organisation information, yes. In the States they started the same process at the same time but were trying to include within that debate the political, economic and social aspects of it, particularly the issue of a whole lot of smaller water supplies—many thousands of water supplies—that had arsenic levels that would have exceeded what the toxicologists were recommending. What the costs would be to get that fixed became the dominant issue. Consequently, right up until the Bush administration got in, there were all sorts of debates about what this level should be. It got to the point that they were going to put a figure of 10 micrograms per litre on it, and they had done a heck of a lot of work on how they would fund the water rehabilitation program that would come out of it.

When Bush got in, he immediately canned all that and said, ‘No, it’s going to be too expensive. We want it reviewed.’ They went through another review process and subsequently, even though they did not want to spend that sort of money, the Bush administration came to the view in the last several months that it seems that having a maximum of 10 micrograms per litre is necessary for public health purposes. All I am saying is that it has taken them 10 years longer to get to a similar point because of this process.

There are many other examples that I could mention. In the Australian context, I can tell you about my own experience when we implemented a health based guideline value for copper in water. That was the last time the guidelines were changed and was back in the 1990s. It was the first time that there was a health based guideline; prior to that it had been only an aesthetic guideline. The copper industry really worked hard on the committee to influence that process. The people who are working on these things are medicos, scientists, toxicologists, biologists and the like, and they are not necessarily well equipped to deal with these sorts of pressures. It is a tough enough task as it is to look at the public health research information and work through that in a sensible way to come up with what is an acceptable value for water quality.

**ACTING CHAIR**—Mr Day, you were talking about the chemical bases in some areas. What were those chemicals? Were they man-made chemicals?

**Mr Day**—No. These are in just about all cases in regional and rural Australia, because it is relatively underdeveloped. The sources are, as I mentioned, predominantly from ground water and therefore are well protected and naturally occurring. There is a range of chemical contaminants that include fluoride, nitrate, uranium and arsenic, as Don mentioned. There is a range of parameters that we are seeing throughout the water supplies of regional Australia that do have a health related value as set out in the drinking water guidelines.

**ACTING CHAIR**—And they are naturally occurring substances within the collection point—that is, from where they come from?

**Mr Day**—That is correct.

**ACTING CHAIR**—And they would need to be treated within the system from the source to the user or the consumer?

**Mr Day**—There is a range of possible interventions. It may be adequate, following consultation with the community, to continue drinking waters that have elevated chemical contaminants. In the case of nitrates, which are predominantly of concern for breastfeeding mothers, it may be that bottled water for that particular group of customers is provided. So it does not necessarily translate that there needs to be treatment. Indeed, if treatment is required, it may be for only that portion of water that is used for drinking and food preparation.

**ACTING CHAIR**—I think public comments go something like: ‘My grandfather drank it; I don’t see why it is going to hurt me.’ Has this trend towards improving the standard by lifting the regulations worked in areas of your—

**Prof. Bursill**—You are referring to the sorts of things that have happened in some rural areas?

**ACTING CHAIR**—Yes.

**Prof. Bursill**—I think the best example of this is in Victoria. When the Kennett government was in, certain edicts were put down about improvements not only to the drinking water systems but to the waste management systems. It is interesting from the CRC perspective. We have representation on our CRC from most of the water industry around the country, and we get to see it more from a helicopter view, I guess. As a result of that initiative, when we run workshops in rural Victoria the players come to our workshops with their ears pinned back and their eyes wide open. They know the issues, and we have a very healthy, active debate on these matters and how we can advance them. I think that that has been an excellent program in Victoria, and you can see some terrific developments there. There are some areas where parts of the system are taking advantage. There are some authorities that have not had the internal expertise to know when they are getting sold something that is a bit of a gold plated process that did not really need to be put in place. So there is some very sophisticated treatment technology in some of these rural systems that is over the top by a long margin. I must say rural New South Wales is a completely different picture; you have not got that same imperative to improve. In fact, the costs of a lot of the monitoring are covered by the health authority in Sydney and they even look at the results, so the accountability and the ownership is not there. We go with the same people, the same program, the same information and try to engender the same discussion, and it is very hard to keep people awake, I can tell you. I think that tells you that there is a risk there of mismanagement.

One thing I did not mention was that there was a national convention in Perth just a few weeks ago that we were both at. The Associate Chief Justice of Ontario, Dennis O’Connor, gave the keynote presentation on his involvement in the Walkerton inquiry in Canada. This is a community of about 5½ thousand people. It had a mismanaged water system, but there was fairly good water supply, actually, which could have been easily managed. If our framework had been in place, Dennis O’Connor believes that the seven people who died as a result of contamination of their water system would not have died—and more than 2,000 people were hospitalised. He gave a very graphic presentation of the impact that had on that community in environmental and social terms. The long-term damage of losing key family members and the impact it had on that whole society were incredible. It was a very moving moment. He gave us a very good wrap-up for this framework, and he was not sure how to move forward until he saw that. He said that this is the way we have to go. The legislative requirements in Ontario, if they had been followed, should have prevented it happening.

So there are some issues around the country. I think that the sort of thing that was done in Victoria is good, but I do not think they went quite far enough. I think, for example, that they should have addressed the pricing issues. Some of the prices paid by customers in rural systems in country Victoria are not sustainable—prices like 35c to 50c a cubic metre when the cost of provision has to be more than double that, at least. It is going to make it very difficult for them to maintain it.

**Mr FORREST**—I am not going to get drawn into that pricing issue. Governments when they get elected like to stay elected; it is a bit sad, really. I have a few questions but I will probably ask a bit more about the CRC first. I noticed in the membership list that Western Australia looks a little weak. I can only see the Curtin University. Is that a correct observation?

**Prof. Bursill**—No. There is the Water Corporation of Western Australia. Was that omitted? It has certainly been a party to the CRC all along. That is a state-wide water authority, so it covers the whole of Western Australia.

**Mr FORREST**—My impression from reading your submission is that there is a focus on quality, and that is good. But my anxiety is about quantity, and presently nearly 10 million Australians are on some level of water restrictions. Two million of those are in stage 3, which is pretty severe, and probably within a month or so even that will increase. So is the CRC in some way investing in research about quantity as well as quality?

**Prof. Bursill**—No. It is mainly about quality, but of course the availability of water for public water supplies is an issue for us. One of the reasons why I made that comment about the relative use for urban water systems versus irrigation and the glaring need, it seems to me, to improve the way in which we use water for irrigation, I think there is great scope there for returning water to the system for environmental purposes and that the existing allocations would be more secure for urban communities that live on those systems as well. In reality, though, the COAG reforms—certainly in the major urban centres with pricing and the technological improvements that have occurred in water treatment—mean that it is technically feasible, and I think economically achievable, to produce drinking water from other sources; even desalination of sea water has got within the realms of affordability of major communities—Adelaide, for example.

**Mr FORREST**—I would like to pursue some of those matters. The CRCs are leading the debate in terms of better use. I did note—and got a little anxious about—your comments about effluent reuse. I hope that your emphasis on quality does not cause us to falter on being smarter about using grey water.

**Prof. Bursill**—I saw in some of the transcripts—I have glanced at only a few of them—of this meeting that people have made comments about the fact that the health guidelines for water provide some restrictions on the so-called innovation of water use. You hear, in public consultations and workshops within various sectors of Australia, people say, 'This is too restrictive; we ought to loosen up on guidelines so that other options are more readily available and we can be more innovative.' What that translates to, in reality, is: 'We want to take more risk with public health to enable these water sources to be used.' I am against that; I do not think that is being more innovative at all. Surely one should be challenging this system where we can use this water. Here in South Australia, there are very good programs in aquifer storage and recovery with effluents and stormwaters. We are reusing our waste waters here at a fairly high

level for various horticulture endeavours, but with a very clear view about what the health risks are and how to manage them, and that is what needs to be done.

**Mr FORREST**—I think I have that in context. But it seems silly using WHO quality water on golf courses. We ought to be smarter, and we can operate within the rules of our public health.

**Prof. Bursill**—That is right. I do not believe this country needs to have effluent reused for potable purposes, broadly speaking. There might be a very small community somewhere in a very remote establishment that I am unaware of.

**Mr FORREST**—I do not think we are suggesting that.

**Prof. Bursill**—No, although there are communities around that feel that. I do not know; maybe it would make them feel better if they were completely recycling everything. I think we have to be aware that that pressure is there.

**ACTING CHAIR**—But, Professor, overseas experience tells us that many countries in the world recycle their water in considerable ways.

**Mr FORREST**—But not for potable purposes.

**Prof. Bursill**—Yes, they do. In Namibia it has been done at Windhoek for 40 years. In Namibia, 100 per cent of the water resources are committed, and they need to do that. Mr Adams is referring, I think, to places like Europe, North America and England, where you have major population centres on a river system and their effluent is going into the river and maybe only hundreds of metres further down someone else is drawing it out. There is a psychological and social aspect to this matter, too. It is real and it needs to be taken into consideration. Water has an identity, and most people in the community—and I would be in that category—would say that they do not want to see it just piped from an effluent system back to a water treatment plant and recycled back to the system. But it might be different if it were discharged into the natural environment and re-recovered somewhere else, perhaps fairly heavily diluted.

**ACTING CHAIR**—We cannot do that in Australia, though, can we—under most state guidelines you cannot put that water into a river or into a creek?

**Prof. Bursill**—No, that is true, and I think that is a good thing. I was going to say that in Denver, where they have serious water problems, they spent a lot of money on a research project on sewer mining, using the highest technology to return that water to a pristine condition. They did a lot of work on health studies, but the community still rejected it, and it was a complete waste of time in the end. There is a social aspect to this that needs to be understood.

**Mr FORREST**—But the agricultural and commercial opportunities and sporting opportunities are acknowledged; that is a big saver.

**Prof. Bursill**—That is right.



**Mr FORREST**—You also mentioned the experience in the Rhine, which I was interested in. It is a river that traverses many countries. That is some of our problem here, particularly with the Murray-Darling. We have a good organisation that manages it, but it is constitutionally difficult. What process—what legal framework—did the Europeans use?

**Prof. Bursill**—I am not across the details of the legal framework. I am just very much aware of the fact that, through my colleagues in those countries, they collectively at the political level decided that they were fed up with the increasing pollution of the Rhine and the incidents that put their water supplies at risk as well as their industries and the health of the community, and they were fed up with all the fish kills and ecological impacts. They decided they wanted, as I said, salmon back in the Rhine. In good European fashion, they sat down and worked out technically what needed to be done, and all the various countries worked through their part of that. I used to get Christmas cards regularly each year from participants in those regions that would show you the system all mapped out in diagrammatic form with the colours indicating the severity of pollution as it was when they made that decision, five years later, 10 years later and so on and what it was currently. You could see this progressive improvement, and they worked very hard to make sure that the total community in that whole area were backing the process.

**Mr FORREST**—We might try and pursue that. They would have had to have used the European Union, too.

**Prof. Bursill**—Quite possibly. We ought to look into it. There are differences there—they have a much greater population density, more industry and more intensive horticulture; they do have more water, which is on the plus side, but most of the pressures are negative compared with us. The key point that I was trying to make to that conference last year was that them coming out with a clear vision of what they wanted and working through defining the technical objectives and the strategies to achieve those objectives was something I do not see very often here at all. I made reference to the 800 EC units at Morgan for salinity measures in the Murray-Darling Basin, and that is one clear objective. I was making the point that perhaps that is the reason why that salinity mitigation program is the most successful of the MDBC. For the rest of it, although it is a good system—and I am not knocking the MDBC in any way—the problem is that, when it comes down to actual details, water allocation is the important issue and it goes back to the states. Those who have been involved in these water allocation meetings will know that, especially from the eastern states' perspective, they sit down and work out what is in the storages, what the long-range weather forecasts are for the season and what the computer models tell them about availability. They take off the minimum entitlement flow to South Australia, somewhat begrudgingly, and then allocate it all around. There is no concept of what is needed to keep this system healthy. The sort of mentality that exists there is that any water that goes past the door is a lost economic opportunity. We need to address some of these cultural issues.

**Mr FORREST**—If they can do it in Europe where they all speak different languages, we should be able to manage it here. They are only state regimes; they are not federal regimes.

**Mr WINDSOR**—Just to follow on from that general theme that Mr Forrest has raised, this is a national inquiry, and we do have state legislative processes to work through and we do have that problem that you just identified quite graphically—in my view, anyway. Given your knowledge and the CRC's knowledge of the state based regimes, how do we actually drive this

from a federal perspective? What needs to happen? Do incentives have to be put in place for the states? What sorts of drivers can we use without going through some sort of constitutional change?

**Prof. Bursill**—I am no expert on things like subsidies and compensation and issues of that nature. I am just looking at it from a holistic point of view. I am mainly a water quality person. We do have a sustainability program in our new CRC and we are trying to address that from an urban context. But I see too much reliance, in my opinion, on economic measures, and I think that is just sort of fiddling around and tweaking the edges. We have set up a market, a trading market; it is not quite working and it is not quite fully developed, but it has already meant that orders of magnitude increases in the cost of water on the market have occurred. So if in fact we want to return water to the system, it is now going to cost a lot more if we buy it back. People talk a lot more about compensation as a result because they see these windfall capital gains in a greedy sense, I believe.

Government really needs to show leadership, and that is why I have had this emphasis on the vision being clear. I am not even sure that this community of Australia actually collectively wants to see a sustainable ecosystem for its rivers. If so, why haven't we said so? I think that in the 5 December research priorities there are some statements on water being a critical issue. It would be great if that were picked up and developed more by the Commonwealth. I cannot imagine the individual states coming up with a common vision. Maybe I am wrong—I hope I am wrong. That is the point that I am trying to make here: I would like to see the Commonwealth show that leadership. But I cannot get down into the detail of how you might go about tweaking things. I think there is a bigger picture that needs to be sorted out first.

**Mr WINDSOR**—On another issue, one of the things we are visiting this afternoon is the Salisbury recharge example. That is a very good example, I guess, because it is urban run-off as well as some agricultural run-off. In terms of water quality, is the CRC monitoring what is actually happening to the aquifer with that water that is going back in?

**Prof. Bursill**—The CRC is not, but this is a project that has involved a lot of players, including SA Water and CSIRO, and there is a program of looking at what happens in the longer term with putting this water down into the aquifer—whether it will block up the aquifer or contaminate the water that is there and so on. So far, my understanding of the work that has been done there is that it is showing great promise, and you will obviously get a lot more detail about that this afternoon.

SA Water has done a similar thing down at Clayton with the community down on Clayton Bay, taking water from the lake system and putting it underground and bringing it back. The intention was to store water there when it was of reasonable quality because they have a problem from time to time; there can be fairly lengthy algal blooms in that lake system. There is one there at the present moment, for example. During those times the toxic algae puts restrictions on its use. The thought was that if we could store water in there while it is in good condition and then use it for the community when they cannot use the lake, then that would be great. But, as it turns out, the actual passage of the water through the aquifer improves the quality significantly and it is used all the time. They do not use the water directly from the lake any more. It is put into the aquifer and withdrawn from the aquifer and used for public water supply. It has been running like that for four or five years now without any signs of any difficulties.

**ACTING CHAIR**—There is science happening that we do not know about.

**Prof. Bursill**—And it is just natural filtration in this case.

**Mr WINDSOR**—Darryl, in terms of the regional communities that you have dealings with, how concerned are they about that? It probably follows up on Don's suggestion a moment ago. How concerned are they about water quality or are they still fiddling around the edges in terms of what they drink?

**Mr Day**—I think there is quite a lot that is unknown at a community level. Certainly the focus of the drinking water guidelines is involving the community in a consultation process, especially where you are reaching or exceeding the limits. There are some jurisdictions that are doing it very well, and there are some that are doing it fairly poorly across the country. It is quite a mixed bag if you look at it on a state-by-state basis. I think, as Don said, the achievements in Victoria have been very successful and they are proposing to further strengthen that with legislation that was introduced in the Victorian parliament recently. So I think that is an interesting model to have a look at.

**Mr WINDSOR**—In terms of rainwater tanks, one of the issues that is being put to this committee—it is a fairly simplistic one, in a sense, in terms of total savings—is that we all should have a rainwater tank. I am a little concerned about some of the comments in relation to the quality of the water in the rainwater tanks, particularly in urban areas. What legal implications could all that have? You have referred to arsenic in the states. That is something that is out there for the future, I guess. If policy guidelines are developed where we actually encourage the holding of rainwater and, at some stage down the track, we find out that the quality of that water is not to the best advantage of our health and it is a policy of government that has created the circumstance, what legal implications are there?

**Prof. Bursill**—I am not a lawyer, so I probably should not attempt to answer that specifically. But in all the various—

**Mr WINDSOR**—Neither are we, but we make the laws.

**Prof. Bursill**—I often get asked to address community groups, to do interviews on radio, in general discussing water, and this question of rainwater tanks always comes up: why doesn't the government support rainwater tanks and subsidise them? My reply is always that I have never seen a sample of rainwater come to our laboratories over the years that has come within cooee of meeting the microbiological guidelines that are in place. Often there are other problems, depending on where it comes from; it could contain lead and cadmium and other chemicals or pesticides. I have seen samples with a lot of pesticides in them; crop-dusting aircraft have flown across rooftops with all their gear still going and it has rained not long after and it has a cocktail of contamination. I always say that it is hard for government to recommend something and perhaps even subsidise something that they know full well does not meet health guidelines for drinking water.

**ACTING CHAIR**—Are we developing any technologies to take care of that?

**Prof. Bursill**—Yes, but it is a question of economics. I have a rainwater tank at a holiday house. I have a microfiltration unit on it, an activated carbon filter and a UV sterilisation



system, and the water is beautiful, but it cost me \$700 to do that. If you do that to the 500,000 or 600,000 households in Adelaide, that is a lot of money.

**Mr FORREST**—This is where the thinking is wrong. The great bulk of water that is used gets used on gardens or flushed down the dunny or put through a washing machine; the smallest amount is drunk by human beings. This is where we mess up, because the perception is we are going to drink all this water. Most of it is not used for that purpose.

**Prof. Bursill**—But there is a problem of scale. As I said, on my rainwater tank I spent \$700 and I have very good water for drinking and cooking in the holiday house. But if you multiply that, if you include the cost of the tank, you could spend in excess of a billion dollars making adequate rainwater collection and supply available for a community the size of Adelaide. That amount of money could go a lot further in a major public system. The costs of treating water are only of the order of 10 per cent to 15 per cent of the total supply costs in a public system. So it is just a question of scale, economics and technology that makes it that way.

If we could treat rainwater to public health standards for \$5 of capital investment then that would be a different story altogether, but the fact is that it is not. The things that people buy in supermarkets that are relatively cheap create more problems than they solve, because you end up with a nice little incubator in these vessels. People do not maintain them; they do not even know how to maintain them. There is no monitoring. As soon as you have to get proper monitoring involved, you are talking about several hundred dollars at a time to do decent analyses of these water samples. That is where it all gets very difficult.

**Mr FORREST**—One of the things the committee is clearly going to have to make some recommendations on is the issue of quantity. I will certainly be urging that as a member. I am interested in your comments in the submission about desalination. I have quite a few desalination plants operating in the part of Australia that I represent. The cost, with reverse osmosis, is down to around 89c a kilolitre—that is, a cubic metre, which is a better way to express it. Most Australians are getting it for 40c or 45c, so clearly the issue is about pricing. But that is affordable—less than a dollar for a 44-gallon drum of water. I am interested in what the CRC is doing to promote desalination.

**Prof. Bursill**—I agree with that and I did make the same point, that in larger communities in particular, and even in some of the rural communities, desalination is an affordable option. One of the issues, if you look at the total environmental footprint of such a philosophy though, is the energy requirements involved. If Adelaide lost all its conventional sources of water and had to rely on the desalination of sea water, that is something that I suppose might closely resemble the situation in Perth at the moment, with the water problems there. They are considering large-scale desalination of sea water. The energy issue is the big consideration. We would not have the generation capacity here in South Australia to deal with it at the moment. But from an economic perspective, provided we plan far enough ahead, we ought to be able to deal with urban water supply issues from a technological perspective. The bigger issue, of course, for this country is the actual quantity of water made available for ecological sustainability.

**ACTING CHAIR**—There is no problem dealing with the salt you are taking up?

**Prof. Bursill**—Certainly you are putting it back in that case. There are technologies now; the one used at Penneshaw involves a South African innovation where chemicals are not required

so one can put the salt back. When you are inland it is not so easy. We are doing a joint study with Grampians Water at Nhill. The reasons we got together with them are, firstly, the Grampians are part of our system; secondly, the Nhill community are very progressive and are happy to support this research; and, thirdly, there is the technical challenge point of view of how we deal with the saline water. In the end it has disappointed me a bit that the Grampians have opted for the safest option and that is to buy some land from a local farmer and put it out to evaporation. Once we get over the hump of dealing with the technology and getting it running, my personal objective is then to challenge this with a little more innovation. For example, there is a chap up at Tailem Bend in South Australia who is taking saline ground water from his affected land, using that to cultivate snapper and other saltwater fish and running that through into an evaporation system and selling the salt. He is making money firstly out of the salt and secondly out of the fish. Hopefully, in the end he will have capital improvements on his land.

**ACTING CHAIR**—That is a very good innovation. Gentlemen, thank you very much for your time and your submission; we appreciate it very much. Hopefully, our report will meet some of the recommendations that you may have in your submission.

[9.56 a.m.]

**PYNE, Mr Christopher Maurice, Federal Member for Sturt**

**ACTING CHAIR**—Although the committee does not require you to give evidence under oath, I should advise you that these hearings are formal proceedings of the parliament. Consequently they warrant the same respect as proceedings of the House itself. It is customary to remind witnesses that the giving of false or misleading evidence is a serious matter and may be regarded as contempt of parliament. Do you wish to make a statement in relation to your submission and then make a few introductory remarks? Then the committee will have some questions for you.

**Mr Pyne**—I am happy to leave my submission to stand as it is and, rather than make introductory remarks which might take up the time of the committee pursuing issues that you are not interested in, I am happy to answer questions that you are more interested in so that we can make up some time since you are running a little bit late. I am happy to stay for as long as you like, but I am thinking about you, Mr Acting Chairman.

**ACTING CHAIR**—Thank you very much for your consideration. Let me start off. You would like the Commonwealth to take over the control of water in Australia. There are some constitutional issues in relation to that. Would it be that you support a constitutional change or is there an amount of money that we can offer the states? What is your answer to that?

**Mr Pyne**—There are really three methods by which the Commonwealth could exert more influence over the Murray-Darling Basin. My submission essentially relates to the Murray-Darling Basin where I think that the obvious parlous state in which it finds itself is a matter for national concern. The Commonwealth could pursue three avenues to exert more power. The first is probably the most far reaching, which would be a constitutional referendum to insert into the Constitution a power under section 51 to give itself a head of power over the Murray-Darling Basin in particular or over the rivers of the Commonwealth more generally if it wished do it that way. As you all know, that would require a majority of votes across the country and four out of the six states voting for it. It would also probably require section 100 of the Constitution to be amended or removed, which at the moment devolves power over the rivers of the Commonwealth to the states. That is probably the least likely to be successful because it requires the maximum change and as we all know constitutional referendums are very hard to pass. It would certainly pass in South Australia, it would probably pass in Tasmania and it might even pass in Victoria, but it would be hard to get it up in Queensland and New South Wales.

**Mr FORREST**—I share your view. You are dreaming.

**Mr Pyne**—That is why I said that it is the least likely to be successful. The other two methods are more within the power of the Commonwealth to act upon without actually having to seek more power. One is to take a test case in the High Court about what section 100 exactly means. Section 100, as you know, talks about the reasonable use of the waters of the Commonwealth remaining with the states, and the phrase ‘reasonable use’ has never been tested in the High Court. It has just been ignored. It has always been assumed that the states had control over the waters of the Commonwealth and no-one has ever raised the prospect. In the

convention debates in the 1890s it was considered that, if the water was not used reasonably, the power would be lost by the states and the Commonwealth would then take it over.

What I propose is that the Commonwealth take an action in the High Court to seek from the High Court its opinion on what reasonable use means and whether the states have over the last 102 years used the waters of the Commonwealth reasonably, particularly in relation to the Murray-Darling Basin. If the High Court found that it was not reasonable use, you would argue that, therefore, section 100 no longer protects the states' power over the Murray-Darling Basin, or the rivers generally, and that power then devolves to the Commonwealth, and the Commonwealth would then have a head of power to control the waters of the Commonwealth.

That could be done by the Commonwealth without the states having to agree to it. It would be an action that the Attorney-General could take, therefore, it is within the power of the Commonwealth to act, to circumvent the constitutional lack of head of power under section 51. But you could argue that it was envisaged by section 100 that there was, if you like, a protection for the Commonwealth which was the insertion of the phrase 'reasonable use'.

The third thing is that the Commonwealth, through the National Competition Council, could withhold payments to the states if they did not fulfil obligations that the Commonwealth put upon them to handle and manage the waters of the Commonwealth in the way that the Commonwealth wanted them to be managed. That has been threatened by the NCC on occasion in the past, but has not been followed through. That would require the Commonwealth to ask the NCC to consider whether the states were not fulfilling their obligations under National Competition Council, and therefore payments could be withheld from them.

The flaw in that suggestion is that the Grants Commission would probably find a way of getting the money to the states eventually in some other form. So what you would really be doing is delaying payments to the states. They would not get it under the National Competition Council, but they might well get it in other ways. In fact, they would probably get around it. So there are really three methods by which this could happen.

**ACTING CHAIR**—If the Commonwealth had the power, what would the Commonwealth do with the power? How does it change the Murray-Darling Basin structure?

**Mr Pyne**—That is a good question. At the moment, the states and the Commonwealth sit down once a year, or more than once a year, and try and manage the Murray-Darling Basin. In the 10 years that I have been a member of parliament, it is really essentially the same script every time. There is always a new report commissioned and great positive comments afterwards to the media about how next year, when this report and this assessment is handed down, inevitably, it will lead to better management of the Murray-Darling Basin. That never occurs. It is a very slow, tortuous, hopeless process, which has led to the Murray-Darling Basin being in a significantly parlous state ecologically, which has an impact on us economically.

**Mr FORREST**—It is better than it used to be though, Chris.

**Mr Pyne**—It is better than it used to be.

**Mr FORREST**—I go back to when there was not a commission.

**Mr Pyne**—And that is probably as a result of seven years of coalition government, John. But rather than being political about it today, Dick—

**ACTING CHAIR**—Sure, we will try and keep politics out of it.

**Mr Pyne**—We will try and avoid that.

**ACTING CHAIR**—Do you think the Commonwealth could give a vision to pull the states forward? One idea might be to establish growing areas in Australia other than the Murray-Darling.

**Mr Pyne**—I was going to say that, if the Commonwealth had the power taken away from the states, it would not need to go through this process of sitting down with the four states and having to sort out matters in this inch-by-inch program that never works. In fact, the Commonwealth could take a national view about the Murray-Darling Basin, which is a basin that covers four states. I do not think it is fair to expect the minister for water resources in Queensland to take a national view. His electors are Queenslanders and it is natural that he would put Queensland before the Australian point of view—the same with South Australia, Victoria and New South Wales. It is an anachronism that a national issue like the Murray-Darling Basin—

**ACTING CHAIR**—But give us the vision. We give the power to the Commonwealth, it seizes it or the High Court gives it to the Commonwealth in a judgment. The Commonwealth has the head of power. What does it do with the head of power? How does it change what is happening? It does not have to sit down. The minister and the cabinet can act. How can they act? What is the vision?

**Mr Pyne**—If the Commonwealth had the power, it would have organised water caps over the extractions from the Murray-Darling Basin back in the late eighties and early 1990s when they were considered. They were finally signed by three states in 1997—this is just one example—based on 1993-94 extractions. I think Queensland has yet to sign the water cap agreement. If the Commonwealth had the power, it would not have to rely on states signing these agreements. The National Action Plan for Salinity and Water Quality, which is a fantastic \$1.4 billion program, has taken the Commonwealth years and years but is still not in place because it has to work through the states, which are naturally parochial in their interests and, as a consequence, do not take a national view. The vision is that the Commonwealth would be able to say, 'We've got \$1½ billion to spend under the national action plan. We've got the Natural Heritage Trust, in which the coalition has put several billion dollars over the last seven years. We can go out and effect the changes to the ecology which helps the economy of the Murray-Darling Basin without this tortuous process of going through the states.'

**ACTING CHAIR**—What about the communities that are affected by the reduction in water usage?

**Mr Pyne**—They would not necessarily be affected. I am talking about the legal aspects of how the Commonwealth could take the power. The detailed programs of what would then happen and how the Commonwealth would manage the Murray-Darling Basin is not part of my submission. My submission is about the legal aspects of the head of power. But, if the Commonwealth had the power over the Murray-Darling Basin, you would expect them to work

with the communities as they have under the Natural Heritage Trust. One of the primary focuses of the Natural Heritage Trust has been to empower the local communities to manage the Murray-Darling Basin. There would not necessarily be less water being taken out of the Murray-Darling, but there could be better management of the water that is taken out of it and of the specific purposes for which the water is taken.

**ACTING CHAIR**—I put it to you that that is exactly what is occurring now under the present federation system of government.

**Mr Pyne**—It is not.

**ACTING CHAIR**—Those arrangements are in place and there are processes taking place to reduce the amount of water being used using new technologies.

**Mr Pyne**—But how long will it take for the states and the Commonwealth to establish a water property rights regime in Australia that works and is effective when all of our experience over the past hundred years has been that every suggestion that has been made by the Commonwealth takes 10 to 15 years to get up and running?

**ACTING CHAIR**—What about the price of water? Do you support the price of water or the privatisation of water?

**Mr Pyne**—I have not made a submission about the price or privatisation of water. I have made a submission about three constitutional aspects that the Commonwealth could pursue if it wanted to have more power over the states. It should have it. It is a national issue that should be addressed by the central government. The states manage many things well that should be states' responsibilities, but the Murray-Darling Basin is not one of them.

**ACTING CHAIR**—So it is a vision that you are bringing us.

**Mr FORREST**—It is a worthwhile suggestion, Chris. In fact, I remember coming to the parliament with that view, but you get to realise how difficult it is. You have three possibilities. I think we are doing the third one in a way. If you were king for the day, if you were the Attorney-General and you had support in cabinet, which one would you go for?

**Mr Pyne**—I would take the action through the High Court to work out the definition of reasonable use. There are precedents in English law which we use in Australian law for what unreasonable means. I think in my submission I referred to a case in 1878 of the Earl of Sandwich v. the Great Northern Railway Co., which was about whether the way that the corporation was using the water upstream affected the Earl of Sandwich's properties downstream. It was found that it was unreasonable, and the corporation was not allowed to change the use of the water in an unreasonable way. So if I were Attorney-General for a day I would take that action in the High Court.

**Mr FORREST**—That was not an action brought by the government, though. You have to wait for the normal process.

**Mr Pyne**—No, that was an action between two legal entities. If I were the Attorney-General for the day, I would get the Commonwealth to take this action in the High Court to pursue what



‘reasonable use’ means. If the High Court found that the way the states managed the water had been unreasonable, it would tear down overnight the edifice of the way we managed the Murray-Darling Basin and the states would no longer have the right to say to the Commonwealth, ‘You can’t do anything about this without asking us first.’ We would then, I would hope, work in cooperation with the states to manage it, but they would not be able to say, ‘Really, you’re a guest at this table; this is a matter for us,’ which is the way it has been handled for the last 100 years.

**Mr FORREST**—Wouldn’t you need an actual incident—a particular reference?

**Mr Pyne**—It could be done in a couple of ways. The Attorney-General could find a case that was to do with water property rights along the Murray-Darling Basin or anywhere in Australia. In fact, the Tasmanian Dams case was a matter to do with water property rights in which section 100 was canvassed by the High Court. The Attorney-General could join that case or take the case on behalf of a corporation or a legal entity and, as part of it, argue that section 100 no longer allowed the states control; or the High Court could simply be asked by the Attorney-General for an opinion on what reasonable use means. He would probably take the former course, which is to find a case and run that through the High Court, in which the argument about what reasonable use means would be part of the dominant aspect of the case. That is what happened with the Tasmanian Dams case, with the external affairs power, of course. That led to the understanding of the external affairs power.

**Mr FORREST**—Politically, it would be extremely difficult.

**Mr Pyne**—Politically, it is extremely difficult, but that is the beauty of being a backbencher: you are allowed to traverse all sorts of arguments and put them up when there is no Commonwealth policy on this. The coalition does not have a policy position on whether the states or the Commonwealth should have power over the Murray-Darling Basin. So, in fact, it is a niche area which is interesting to pursue.

**Mr WINDSOR**—I congratulate Mr Pyne on taking the initiative. I think a lot of people recognise that the system, as it is working at the moment, is not delivering the outcomes. In terms of your submission, the definition of reasonable use is going to be the key word. In the water debate at the moment—through the COAG processes, the national action plan and other processes—the definition of property rights is still being disputed, even though it has been eight or nine years since the Commonwealth, through the COAG processes, made a demand that an appropriate definition of property rights be recognised. The Commonwealth is still handing out the money with essentially no definition of property rights. I think there is a problem there.

In terms of reasonable use, the debate, if it gets into the High Court, will surely be about how water should be used. Please do not answer this if you feel it is outside your submission. In South Australia’s case, would you see what South Australia has done—in terms of the Murray mouth, Lake Alexandrina and the consequent saline impacts that have spread from there and the use of the barrages through the Murray within South Australia—as being a reasonable use of water?

**Mr Pyne**—I think there are many good examples all along the Murray-Darling Basin of where the water has not been used reasonably. If I were to take an action in the High Court, I would pick the various assessments and analyses of the Murray-Darling Basin which talked

about barrages, fish stocks dropping by 80 per cent in particular areas and the environmental degradation that had occurred, particularly in places like Victoria and South Australia. I would talk about the fact that, in 2020, for two out of five days Adelaide's drinking water will not be drinkable and say that all these assessments, all these facts, point to the fact that the water could not have been used reasonably. If it were being used reasonably, why would we be in this situation now? The closing of the Murray mouth would be another good example. The fact is that 30 per cent of the water of the heads of the Murray actually gets to the mouth of the Murray. All these are good examples.

The way it has been managed over 100 years has been entirely for irrigation. I think George Williams, in a paper that he presented recently, said that the way the community, society, the courts and politics think these days, ecology would certainly play a role today in whether people regard it as reasonable in a way that it would not have done 103 years ago. So therefore, yes, you would use the barrages as an example. You would talk about the management of the Murray-Darling Basin which has led to the sorts of salinity problems that we have in New South Wales, South Australia, Victoria and Queensland and try and get the High Court to see that therefore you could not potentially argue that it was a reasonable use.

**Mr WINDSOR**—In terms of trying to drive the agenda of getting the Commonwealth to have more power rather than the constitutional means of doing so—which, as Mr Forrest said, would probably be unlikely—

**Mr Pyne**—That is right.

**Mr FORREST**—Even though it might be the most appropriate way to do it.

**Mr Pyne**—It would actually be the most appropriate way to do it; you are right.

**Mr FORREST**—The use of money has always been seen as a fairly powerful tool in terms of coercing the states. Would you be supportive of the general concept of a national environmental levy with some of those funds—of a significant nature, not just a couple of hundred million—being used, in a sense, to compensate the states and water users for the loss of what they perceived as being rights, to have a positive gain in terms of reasonable use of the resource?

**ACTING CHAIR**—Unclog the decision making.

**Mr Pyne**—I would not endorse a levy today, because I am never supportive of increased levies or taxes or things like that. I would say that there are, within the Natural Heritage Trust, a dryland salinity action plan and other measures of the National Competition Council—other measures by which funds could be found for compensation and rearrangements of property rights. I do not think there is any doubt that, if the Commonwealth and the states agree that there has to be substantial divestment of water property rights by the current holders of those rights or their users, there will definitely be compensation for that. It would be the same case if the Commonwealth compulsorily acquired land: it cannot do so without paying a fair price for the land that it compulsorily acquires. If the Commonwealth and states decide in 2003 or beyond that we cannot go on as we are, that is no fault of the property owners—who have been using the water quite legally for the last 100 or so years since Federation—and the Commonwealth would have to take some kind of compensatory approach.



**Mr WINDSOR**—If you would not support a levy, what source of funds would you support? Where would you get the funds from?

**Mr Pyne**—I would put that to the Treasurer and the Minister for Finance and say, ‘We need large amounts of money and we do not want to have a levy, so how do we get across that?’

**Mr WINDSOR**—He would put it back to the states, saying that it was their problem. So we do not go anywhere.

**Mr Pyne**—That is the problem; you are quite right. The way the Murray-Darling is handled now, there is always somebody to pass the buck to. If the Commonwealth had responsibility for it, it would actually be able to take responsibility and have the rights to deal with it, which it has not got now. At the end of the day, when the states agree to do anything, the Commonwealth provides at least 50 per cent of the money—if not more—yet we do not actually have any power.

**ACTING CHAIR**—The power is the cohesive power, used in so many other areas, that the Commonwealth has built up over the years.

**Mr Pyne**—You should also remember that, in the convention debates in the 1890s, the first drafts of the Constitution actually had the power over the Murray-Darling Basin in the hands of the Commonwealth. It was only in 1898, at the Melbourne convention, that New South Wales managed to succeed in convincing them that it should be a states’ matter—not because of irrigation but for navigation of the paddle-steamers and the things they had on the Murray in those days. The debate has certainly moved on; South Australians knew this back in the 1890s, but could not convince the other states and, at the last minute, George Reid managed to do us over.

**ACTING CHAIR**—Ingles Clark wrote it originally, did he?

**Mr Pyne**—He might have; I do not know who wrote it originally.

**Mr FORREST**—It has not happened yet, but it has always been an anxiety of mine that some idiot would take the Murray-Darling Basin Commission to the High Court. The way it is set up and the decisions it makes is very constitutionally shaky; but that has not happened. I want to make a correction of a perception that I have picked up that all is lost. We heard evidence earlier of the way the Europeans have fixed up the Rhine, with no need for constitutional conventions and changing constitutions. They did achieve it with cooperation because there was a bit of determination. We have a pretty good framework in the commission. South Australian taxpayers’ money is being spent in Victoria and New South Wales, and Victorian funding is being spent in South Australia to get real outcomes to drive specific programs. So all is not lost. I do not know whether that is what you are really saying.

**Mr Pyne**—It is better than it was. There is no doubt that great progress has been made and, within the framework we have, there is progress being made, but it is extremely slow progress. In the United States and Canada, the superior courts have taken the very liberal view about the national intervention powers of the federal or central governments, but we have not here in this country. They have a much better water management system, where the states almost invite the national government in to fix problems they cannot fix themselves, whereas we in Australia

really have been making hay while the sun shone or almost killing the goose that laid the golden egg, to mix all our metaphors. We have been able to get away with it, because we have a small population and huge resources. But in the long term I am not sure that the states are the appropriate mechanism to handle our most important economic and ecological resource. Even though we have a good framework, it is a framework that can break down at any time. If the goodwill disappears, it will all go back to the way it was before.

**Mr WINDSOR**—Following on from that, this good framework you are talking about is partly based on the National Competition Council and the various COAG arrangements that have been put in place—salinity, water quality, pricing policy and some other aspects. It was set up essentially to remove from the states some of those too-hard basket decisions and to have a bit of a global view of some of these issues. There were certain guidelines put in place back in, I think, '94 or '95, and those guidelines have not been adhered to by any of the states.

**Mr Pyne**—That is true.

**Mr WINDSOR**—We had the National Competition Council in Melbourne a couple of weeks ago virtually saying about property rights—one of the guidelines that was put in place by the Commonwealth government of the day and endorsed by subsequent governments—that, no, they were political decisions; that definitional arrangements were political decisions. The question that a lot of people are asking is: if these sorts of bodies have been set up to deal with some of these difficult interstate issues, why is the Commonwealth continually shovelling the money out to the states for noncompliance?

**Mr Pyne**—I could not agree with you more, and it is a very frustrating process. A good example is the Queensland property owners not signing the cap agreements; the other states signed them based on 1993-94 extractions. Queensland was clearing more land, taking more and more water as quickly as it could. When they did come to sign the cap, they said: 'We are signing it on current usage, not 1993-94; you cannot ask us to go back to 93-94.' It is just an embarrassing ruse designed to take as much water as they can before they have to agree to a cap. They will agree and, when they do, they will agree to the cap based on the outrageous amount of water they are taking now rather than the water they were taking in 1993-94. It is a very frustrating process. It is why South Australians are agog that this is a matter that has not been resolved all this time.

**Mr WINDSOR**—But the point Mr Forrest is making is that there is a framework in place now.

**Mr Pyne**—There is a framework and we have made progress; it was worse 20 years ago.

**Mr WINDSOR**—A major player in that framework, the Commonwealth government, has the capacity, using the money as a driver, but has not made the states comply.

**Mr Pyne**—That is a lack of political will.

**ACTING CHAIR**—I think the situation is that, as the council told us, it is a matter of political judgments—that is, a political judgment of the Commonwealth and each state—in reaching those agreements. I do not think there was any laid down position on property rights as such within that COAG agreement. I guess at the beginning they came together and they left

some things open, as happens in those sorts of agreements bringing the states and the Commonwealth together, and they have achieved where they have. I guess it is the next round that will tell. I do not think somebody has not complied and somebody has complied. I do not think it has been the Commonwealth so much. I think what has been extracted is what could be extracted from agreements between the states and the Commonwealth.

**Mr WINDSOR**—With due respect, Mr Acting Chairman, I would not like that to appear on the public record in that sense. The original arrangements between the states and the Commonwealth were that a definition of property rights be recognised as part of the processes in relation to the flow of money from the Commonwealth to the states. In some states a proper definition of property rights—we are talking about eight or nine years—has not been recognised.

**ACTING CHAIR**—Did that come out of the evidence that we got from the Competition Council the other day? I do not think it did. I thought I asked that specific question. We might have to refer back to that.

**Mr Pyne**—I am glad I started that debate.

**ACTING CHAIR**—I think we will have to deal with that in private meetings.

**Mr Pyne**—I have here a couple of legal papers that were written on water rights and the River Murray back in the early seventies and more recently by Professor Sandford Clark. These are the only two copies that I have brought with me, which is a bit silly. When I go back to Canberra I could make them available to the committee.

**ACTING CHAIR**—We would appreciate that. Thank you very much. As the committee has no further questions, would you like to make a closing statement?

**Mr Pyne**—No, thank you; that has been good.

**ACTING CHAIR**—Thank you very much for your appearance today.

**Proceedings suspended from 10.27 a.m. to 10.45 a.m.**

**RADCLIFFE, Dr John Clive (Private capacity)**

**ACTING CHAIR**—Welcome. Although the committee does not require you to give evidence under oath, I should advise you that these hearings are formal proceedings of the parliament; consequently, they warrant the same respect as proceedings of the House itself. It is customary to remind witnesses that the giving of false or misleading evidence is a serious matter and may be regarded as contempt of parliament. Would you care to make some introductory remarks?

**Dr Radcliffe**—I come here with some background in the water area. I was Director-General of Agriculture in South Australia for seven years and later Deputy Chief Executive of the CSIRO for seven years, a Murray-Darling Basin commissioner and various other odds and ends. More recently, I have been a member of the Arid Areas Catchment Water Management Board of South Australia. Currently I am doing a review for the Australian Academy of Technological Sciences and Engineering on water reuse in Australia, which itself is quite an interesting subject because much of the reuse is not driven by saving water but by other things. If you wish, we can pursue that later.

I guess the thrust of my submission revolves around the NCC review process for the introduction of COAG water reform. I suppose I should go back to the framework. The original framework shares issues of economic efficiency with the rest of the NCP program, with provisions for water pricing and cross-subsidies, investment in new schemes, trading and water entitlements and institutional reform. It is unique, however, in having explicit environmental objectives and obligations, though it might be argued that they are still coming. The basic premise was set out, among other things, in the 2001 assessment, which said that the NCP water reform framework is an integrated approach that addresses environmental, economic and social issues associated with water use. It covers both surface and ground water and recognises that, while water reform is primarily a state responsibility, some issues need to be addressed by coordination and cooperation between the states, which is certainly true enough.

In the 2001 assessment there was a broad focus covering pricing property rights, water trading and environmental issues. But there was no reference there to the issue of the actual efficiency of managing the water in physical terms. We then looked at the assessment issues in the current round. We have a whole string of assessment issues, but again that issue does not really seem to come out.

If we look at the 2002 assessment, we find one of the points, 3.56, describes contributions to economic growth as ‘more efficient use of new and existing water assets’. It goes on to say that ‘the economically viable test for new investments in rural schemes is reducing wasteful investment and ensuring future generations do not have to pay for poor current decisions’. All of that is fine, but it is driven by the definition of water assets. I think the definition they have in mind is the economic infrastructure and not the actual water. I would suggest to you that one of the water assets is the water itself.

In 1999 the Academy of Technological Sciences and Engineering did a review, *Water and the Australian Economy*, which included the comment that ‘as much as 40 per cent of the water channelled for irrigation is lost to evaporation and seepage’. We know that something like 75

per cent of Australia's water is used in irrigation one way or another. I suppose that really brings me to the thrust of my submission, which is to suggest that there could be a circumstance in which it would be economically most effective to not invest in new infrastructure, to replace facilities that had considerable losses, because the capital invested was largely sunk and, if you in fact invested in major new capital, that would, in purely economic terms, reduce the economic efficiency of the operation, although it would save a lot of water. This came up originally at a presentation that John Anderson made to the Australian agricultural Outlook conference. I asked him a question about this issue, to which his response was: 'That is interesting; please send me a bit more information about it.' I sent him a letter, the upshot of which was that a consultation, I think, was carried out by some of his staff and the departmental staff as to the legitimacy of this concern. The message I got back in the fullness of time was that nobody really came up with a legitimate rebuttal to my hypothesis, and the suggestion was made that I should perhaps draw your committee's attention to this particular issue.

What I am saying is that the efficiency with which we use water is a major issue, and it can have a lot of ramifications. The system can be very complex. There may be many issues which are not always readily apparent. For example, we might want to plant a lot more forests, but they may access a lot of ground water which they were not previously accessing and reduce the amount of ground water available for other rural users—should they have a water entitlement to grow a forest in what appears to be a dryland environment. They are the sorts of issues that come up. Another issue in water efficiency is the whole thrust of the Great Artesian Basin Strategic Initiative, which is to save a lot of water. That is fine and is going ahead. That is a good example of where the physical saving of water is being recognised. I will leave it there. Please ask me questions as you see fit.

**Mr WINDSOR**—Did you say a moment ago that 75 per cent of Australia's water is used in irrigation?

**Dr Radcliffe**—Yes, something like that.

**Mr WINDSOR**—Of Australia's total inland water?

**Dr Radcliffe**—Yes. The other point to be recognised is the very unequal distribution of water resources around the country. If you look at the National Land and Water Resources Audit, which I had the privilege of writing the final report of, you will see the extent of that. If you care to have it, I can now give you copies of a little map of Australia that sets that out.

**ACTING CHAIR**—We would be very interested in that.

**Mr WINDSOR**—I am interested in that figure. Is that 75 per cent of all human usage or of the total volume?

**Dr Radcliffe**—It is of the total extraction of water.

**Mr WINDSOR**—The inference was that 75 per cent of the total volume of our inland rivers is used in irrigation.

**Dr Radcliffe**—No. If you look at this chart, we can explore that further. Seventy-five per cent of the total amount of water which is used by the community is used for irrigation.

**Mr WINDSOR**—Thank you.

**Dr Radcliffe**—In this chart you will see in different colours the major run-off divisions of Australia as they have been defined. You will see in smallish numbers a percentage. You will also see below the name of each of the divisions a large number in bold, which is the percentage of that water which is utilised. We will look at the small percentages first. Something like 6.2 per cent of Australia's total run-off—that is, the water that runs off the land—is in the Murray-Darling Basin, whereas 24 per cent of it is up in Carpentaria, 21.5 per cent is in the Timor Sea and so forth.

If you go to the big figures below, they show the percentage of the water which runs off which is utilised for productive purposes of one sort or another, whether it be for domestic uses, livestock, irrigation or whatever. In the Murray-Darling Basin, 51 per cent of that 6.2 per cent is utilised. That is by far the highest percentage of any division. The next highest amount is, somewhat surprisingly, in the South Australian gulfs. There is a relatively small amount of water there, but 15 per cent of it is accessed in one way or another.

You can see that there is much more water in the northern area, but relatively little of it is utilised. You have things like the Ord development, which is now starting to go. In many ways, there are probably limits to how much of the water they would utilise, and that brings forth these enthusiastic schemes to ship water all over the country, which in my view are totally unrealistic. But that is a separate issue.

**Mr WINDSOR**—In terms of structural efficiencies, do you believe that what Richard Pratt is talking about is heading in the right direction?

**Dr Radcliffe**—It depends on which aspects you are referring to. At one stage he showed a slight enthusiasm for the old Bradfield scheme. I am pretty sure he has backed away from that now. I have a copy of a publication put out in 1941 and distributed by Elders Smith summarising the Bradfield scheme. If you read it, you will find it contains many hypotheses which are very hard to substantiate in terms of how rainfall will be generated by large volumes of water. It is very similar to ideas about the early settlement of South Australia which suggested that rain might follow the plough and which did not prove to be very effective. However, there are other aspects of Richard Pratt's scheme which involve trying to minimise losses within existing schemes, which are probably quite legitimate objectives.

The NCC clearly believes that there is a need for more effective evaluation of water proposals. In that regard, at John Anderson's request, the National Land and Water Resources Audit prepared a paper two years ago on how we might evaluate future water conservation proposals. That paper was called *Large water resource developments—An integrated assessment process*. It was prepared by the National Land and Water Resources Audit for the Minister for Agriculture, Fisheries and Forestry in 1999. It is available on the Web. I think it would be complementary to the general thrust of the NCC. So I suppose we are past the days of Bert Kelly, who was rather fond of alluding to dams coming on prior to elections. We have to be a little more hard-nosed about these things these days.

**Mr WINDSOR**—I note that you have worked with the CSIRO.

**Dr Radcliffe**—Yes.



**Mr WINDSOR**—We have had hearings with them. One of the things I was personally very disappointed in was that there has been a lot of work done to identify problems, whether it be salinity or natural resource mismanagement, and, when asked what they would do in terms of solving the dilemma if a billion dollars annually became available, they looked blankly at each other and essentially had no idea of what they would do. If a fund were put together of that magnitude, what would be the top two or three priorities that you would have, given your background with that?

**Dr Radcliffe**—The major issue from where I come from is to understand the total hydrology of the system so that you can identify the impact of the individual policy decisions that you might make. For example, I alluded earlier to the notion of planting trees. You might make a policy decision to plant trees which, in some areas, if it were encouraged, might lower the watertable in areas of high dryland salinity but which, in other areas, might actually lower a watertable which was being accessed by other members of the rural community for productive purposes and for which the tree growers, at least at the moment, do not have a water entitlement.

You also have to look at the impact if we, for example, stop a lot of the seepage and leaking of water infrastructure systems. The impact of that depends on where it occurs. For example, if there is substantial leakage in channels going out into the Mallee, that is probably not serving a lot of purpose. What it is actually doing is diverting a large amount of water away from the river environment. If, on the other hand, you are talking about seepage which occurs in the irrigation districts close to the river—say, the highland areas of South Australia—then a certain amount of that leakage actually goes back to the river and becomes another part of the environmental water flow. So, if growers were to introduce more-effective irrigation technologies and reduce the amount of water flowing back to the river, that would actually in some ways reduce the amount of water available for the environment.

There are similar examples if you consider things like salt interception schemes, of which there are several in South Australia. Water is being pumped out of those into drainage basins, and water—which is drainage from the irrigation system—also goes to Noora. Each of those of course means more water going away from the river, and most of it evaporates, so it is not going back into the riverine environment.

It is very easy to look at a single component of these things and come up with a simplistic solution. The difficulty is to try to encompass all of the components. I suppose that is the point of my original submission: that the NCC has come up with an economic focus, but it has not totally encompassed the issue of the water resource itself. So I think we have to better understand how all this fits together. I do take your point that CSIRO sometimes finds it easier to raise what I tended to refer to in my time in CSIRO as ‘Hanrahan’ statements—and I did have something to say to some of the people about that at the time.

**Mr FORREST**—Just on the chart you have presented, the real description of the large, bold figures—for example, the Murray-Darling Basin, 51 per cent—is water that is allocated; it is not the water that is consumed.

**Dr Radcliffe**—I think you will find it is the water that is consumed. The water is allocated, and there are a number of examples within subcatchments where the allocation is in excess of the amount available. There is overallocation, according to advice that I have had, of something

like 20 per cent in New South Wales and 10 per cent in South Australia. If you look in the National Land and Water Resources Audit's assessment report, you will find a map that shows the extent of overallocation of water in various places.

**Mr FORREST**—We have access to that. My question was directed to the fact that you got my attention because you mentioned the Wimmera-Mallee pipeline. I happen to be the member for Mallee. Half of that scheme is already piped. The fact is that for 100 years, of the 200,000 megalitres that left the storages every year, only 7,000 megalitres ever got drunk by a human being or an animal. So the efficiency of the system has been grossly out of proportion for many years and done a lot of damage on the way. So the 51 per cent you have allocated was all wasted water; it did not actually get consumed.

**Dr Radcliffe**—According to the NCC, the pipeline when completed will save 93,000 megalitres of the 120,000 megalitres currently used.

**Mr FORREST**—The part that has already been done is already saving 50,000 megalitres a year. That is one icon of a scheme that should be piped, regardless of the cost.

**Dr Radcliffe**—Sure. I do not have any problem with that. It is a major capital investment. Whether, in the direct economic terms of the capital investment vis-a-vis the value of the water and the current rate at which water is being sold, that is economically viable, I do not know. But the point is that I think we have to look at these things in terms of water efficiency as well as straight economics. Often the economics can be biased by the prevailing prices of water. That is particularly evident in some of the water reuse projects that I have been looking at recently where, for example, water is being sold at 15c a kilolitre for horticultural use, because much of the capital is not supported in the enterprise. In another project, water is being reused from an urban sewerage works, and growers are paying 53c a kilolitre. They have also capitalised the thing themselves, so the real cost is probably over a dollar. Often the price signals that come are very important in terms of the responses that people will naturally provide.

**Mr FORREST**—That is part of what the inquiry hopes to drive. It just emphasises the real value of water, in my view.

**Dr Radcliffe**—Yes. I think water has tended to be underpriced. Even now, for example, if we consider something like the competition between using underground water or recycled water, people can pump underground water as a free good for the cost of pumping it, whereas if they have to buy recycled water there is a price—which may indirectly be fairly highly subsidised, as it turns out, but it is still more than free goods from under the ground. These are the sorts of difficulties that are faced in terms of what are the real costs.

They talk, for example, of moving horticulture from Werribee to 10 miles out of Werribee. Currently, many of the horticulturalists pump water out of the Werribee River, which does not cost them anything, and, if they move to a new location and have to take recycled water at whatever cents a kilolitre, that is a real cost differential. The problem is that, as long as people see water as a free good, they will be pleased to avail themselves of it, and you cannot blame them for it.

**Mr FORREST**—We note that you are also conducting a review of water reuse. Are you doing that of your own volition or are you getting some support?



**Dr Radcliffe**—The Australian Research Council funds opportunities for the four so-called learned academies to conduct projects which are of public and policy interest. I did one last year on pesticide use in Australia. It looked at how pesticide use had changed since the Senate standing committee inquiry in 1990. What that told us was that farmers are now far better educated and experienced in how to handle chemicals than they were 10 years ago. The National Registration Authority does quite a good job of evaluating registration and clearance, which used to be done by the states in a whole lot of different ways and fairly inconsistently, I suppose, years ago. The only problem is that nobody has ever heard of the National Registration Authority and therefore it does not provide a level of comfort to the community that the job is actually being done.

The academy engages me to do those projects, and I am doing one this year. In the one last year, we made presentations to heads of departments across Australia and also to the standing committee on primary industry and the standing committee on the environment and the protection of heritage. That means that the policy issues then get taken up into those sorts of forums and ultimately, if appropriate, to the ministerial council level to make whatever decision they will. The job of the academy is to try to provide a purely objective view of the current state of play. If you would like a copy of what the current academy study is about, I can give you one. I only have one copy of it.

**Mr FORREST**—What is the time line for the completion of your report?

**Dr Radcliffe**—We hope to publish it early in 2004.

**Mr FORREST**—Are you able to offer any insights?

**Dr Radcliffe**—Yes. Like all of these things, it is a very complex area, and it has a number of drivers. Just as the NCC is looking for drivers in what it is trying to do in terms of water reform, the same thing is true in terms of water reuse. For example, the Victorian government has just determined that Melbourne Water, which currently reuses two per cent of its water, shall move to 20 per cent reuse. But many of the reuse driver initiatives revolve around Environment Protection Authority standards for discharging effluent to rivers and oceans, particularly the removal of nitrogen and phosphorous from the effluent.

There is a quite high cost in putting in place a biological nutrient removal system and, if that water can be diverted to an agricultural use, as has occurred in quite a number of examples—say, at Bolivar and Virginia in South Australia and in the southern vales, with the Christies Beach one in South Australia and the proposal for Balliang in Victoria; and there are numbers of others—then that actually has the benefit of saving an investment in infrastructure in waste water treatment plants.

I guess the offsetting aspect of that is that we need to be careful that all of these schemes do not suddenly generate a greatly increased amount of horticultural production, much of which has not historically—particularly in vegetables—been oriented to the export markets. We are pretty much in balance at the moment. There is also another issue, and that is the psychological issue of whether or not people would like to buy vegetables which appear to have been grown with recycled water. There is no difficulty in technical terms with that issue, but there can be psychological difficulties.

There was a good example in which one of the cities north of Brisbane was going to establish a potable reuse scheme. I think it was at Caloundra. They had a local community group set of discussions with focus groups and they said, 'Oh, that is probably all right.' But then somebody stood for the local council saying, 'Do you really want to drink the water that has come out of your sewerage scheme?' And that person got elected and that was the end of that particular proposal. The psychology of these things is important, as it is with water as a whole. There is nothing like a drought to focus the mind a bit on some of these things.

**Mr FORREST**—You are right there. But nitrogen and phosphorous are very valuable resources; they should be sought after. Maybe they are too cheap in Australia.

**Dr Radcliffe**—There are other ways of dealing with it. For example, there are areas where you can have a different structure of your toilet bend so that you separate the urine stream from the rest of it—you may collect that separately and, indeed, try to develop a market for it. I would not say that it is a common approach, but the technology is being developed and used in high-rise buildings in Europe, for instance, where you can introduce that sort of thing. It is probably not very feasible for the urban single house on the quarter-acre block, I expect.

**Mr FORREST**—We have got a long way to go. You are right about the drought. I notice your background with the CSIRO. I am interested in the question of quantity of water if our population is going to grow. In the last 25 years, the weather patterns for the southern half of the continent have changed dramatically. Do you have any view on weather modification and the role of cloud seeding and those processes, given the current attitude and the fact that the CSIRO is not very supportive? Do you have any background in that or experience?

**Dr Radcliffe**—I do not have a direct background in that sort of area; most of that was done in the days when I was chiefly a dairy husbandry officer in the South Australian Department of Agriculture. You are right to say that there have been significant pattern changes, and that is nowhere more evident than in Perth. If you look at the figures since 1973—and I have no doubt they have run them past you because they run them past anybody who will look at them—there has been a significant reduction in the rainfall run-off in the Perth catchments.

**Mr FORREST**—It is the same for every catchment. I have done an analysis of my own. It is a submission to the inquiry.

**Dr Radcliffe**—Things are changing, but the question is whether these are long-term cyclical changes. If you go back to 1914 and those sorts of periods, there is evidence that there are fairly long-term cycles. For example, in the late 1890s there was quite a big run of dry years—probably eight or 10 years, although I could not give you the exact figure. So you have what some people refer to as 'noise'. You then try to determine whether things like climate change are real things and whether they will overlay over the top of it. There seems to be a fairly widespread view that climate change probably will. But climate change has always been with us. There was a time 80 million years ago when northern South Australia was a rainforest, and there are fossils up there to show that—which are actually quite interesting, by the way.

**Mr WINDSOR**—Just to get back to the substance of your paper, physical efficiencies: one of the things that South Australia is leading on, in my view, is ground water recharge.

**Dr Radcliffe**—Yes.

**Mr WINDSOR**—One of the areas where we do have a physical loss to the system, particularly in New South Wales but also in parts of Queensland and the other states as well, is in some of these very large, relatively shallow storages. Do you see any potential further down the track to accumulate new water, or water that would have been lost to evaporation if it were in open storage, in some fairly large ground water storage?

**Dr Radcliffe**—I think there is potential for that. Indeed, I am a member of the Arid Areas Catchment Water Management Board, which deals with the pastoral country, and we did discuss that. We had a member who came off a property near Broken Hill. He collects water in dams, and he estimates that probably only three per cent of it is used and the rest of it evaporates. In fact, we have discussed whether or not we should be trying to develop some sort of aquifer storage and recovery project out there. That would perhaps only ever get water into it once every two or three years; but, if water could be put into an aquifer whence it might be reasonably recovered, that might be a far more effective arrangement in terms of water efficiency than only using three per cent out of the dams that he currently accesses. I think there is certainly scope for that.

I think the whole technology is particularly relevant to urban areas, where the run-off is greatly changed from how it would have been. A very good example of what I see as a pretty creative approach is taken by the City of Salisbury here in South Australia, which has developed a large number of wetlands and a considerable number of ASR bores. A new initiative, which opened just a few weeks ago, is the development of a wetland at Parafield Airport. It is a joint venture between the Commonwealth, the Salisbury council and Michels, the wool scouring company, to store rainfall run-off from the Salisbury urban area in a wetland—there is a series of three wetlands that sort of purify it—

**Mr WINDSOR**—We are going there this afternoon, actually.

**Dr Radcliffe**—and, ultimately, to put the surplus into ASR. It gives Michels a much better quality water than they can get from the mains, which makes them much more competitive with the other companies in Europe which are using relatively pristine, snow-melt water for the scouring industry. That is a good example.

**Mr WINDSOR**—It is on a relatively small scale, though.

**Dr Radcliffe**—It is about 1.5 gigalitres a year. It is quite a bit of water. They use a lot of water.

**Mr WINDSOR**—Has there been any research done in terms of the underground structures that would be required to hold quite large amounts of water?

**Dr Radcliffe**—You need to have a good knowledge of the aquifer structures beneath the area where you might put your ASR, and you also have to manage the water so that it does not clog up, say, sand strata through which it might need to go. For example, in one of the early days of a project at the Bolivar Wastewater Treatment Plant in Adelaide, where there is an ASR bore for waste water, they found that quite a high level of algae developed in the ponds. The algae then tended to block up the ASR treatment on the way down, which meant they did not get the infiltration they sought. But by controlling the algae they have been able to generate much better entry down into the aquifer. You also need to be careful that you do not have fractured

aquifers, because you might put it into one aquifer and then suddenly, if there is a fractured rock structure, it might disappear into another aquifer and you will not be quite sure where it finishes up. So you do need to have a good knowledge of the local geology.

**Mr WINDSOR**—Do we have that knowledge across Australia yet?

**Dr Radcliffe**—I would not say that we have it widely. There is probably quite an investment to make to get that, in terms of drilling. That would be needed in particular locations. In some areas—say, around the Adelaide Plains—there is a reasonable knowledge, but in the generality I would say the knowledge across the country as a whole is probably quite poor.

**ACTING CHAIR**—What does ASR stand for?

**Dr Radcliffe**—Aquifer storage and recovery.

**Mr WINDSOR**—In the area where I come from, there is a ground water system that has been overallocated—and quite a lot of systems in New South Wales have been overallocated. There has also been overuse within the ground water aquifers. I am asking you a difficult question about the capacity to recharge those overused aquifers. People access the water because the lateral move of the water is very slow, isn't it? Is it possible to envisage recharging systems that have been abused in the past?

**Dr Radcliffe**—I think you can recharge a system, but you might create a mound just below the point of recharge. That is the very point you make: the lateral movement is slow. You also need to consider whether or not the aquifer you wish to recharge is the same as that from which the water may have been drawn in the first place. If we go to the example at Virginia, where water is being used from the Bolivar scheme, the recharge might well be to a higher aquifer than the original one whence the water came. In fact, there are two lower aquifers whence water was pumped, depending on which area you were in when the pumping was done. I guess a further part of all of this is that people, if they have too much water, may recharge aquifers close to the surface and generate a problem. That is the sort of thing that is evident around Shepparton and that sort of area.

You really need a very good knowledge of the geology and the hydrology of the area. If you are prepared to invest in that, I think aquifer storage and recovery probably has something going for it. But it is very early days and it will be very interesting to see how, say, the Michels project goes, which you are going to see this afternoon. They have been using that for only about three or four months, I think, and they have not got the volume yet to put it down for aquifer storage and recovery. That raises a further issue, and that is whether or not, after they have used that water in the industrial process, they should try to recover that water as well. They have done a little experiment to show that they could do that if they needed to, although at the moment they do not. They are a major contributor to the Bolivar sewage treatment plant in terms of, for example, salinity.

**ACTING CHAIR**—In your submission and in your comments you talked about the efficiency of water usage and said that water is the issue. Do you think there are areas in Australia where we have used irrigation in the past and where, possibly, renewing the infrastructure is now not going to be viable?

**Dr Radcliffe**—I think there is a macrolevel and a microlevel to that question.

**ACTING CHAIR**—I am talking about sustainability, basically.

**Dr Radcliffe**—Yes. For example, if you are pipelining an existing irrigation system that depends on open channels, it is probably wise to see whether or not the soil types are such that, if you slightly rearrange the infrastructure, you could command irrigation areas not currently commanded which might have better soil types than some of the existing ones that were commanded back from when Chaffey was a boy. Certainly that is an issue that was raised in the pipelining of some of the South Australian ones, although I do not think there was very much change, as it turned out. I think it is an issue that should be addressed.

In terms of whether or not you should abandon any existing irrigation infrastructure areas, you really have to look at the whole issue of economic, environmental and social infrastructure. It is very difficult, when you have a whole social community, to say, 'Right, sorry—we're turning your water off and you have to move.' You really have to address what the options are for those communities. A different way is the impact of, say, *Eucalyptus globulus* in the areas of Western Australia, where there have been big social changes in communities where farms have been put down to blue gums and towns that used to have football teams no longer have anybody there to make them up.

**ACTING CHAIR**—So it is really going to be driven by economics. But we restructure industries: we restructured the dairy industry; we restructure the car industry from time to time; and we restructured the textile industry that we used to have. Is it time for us to restructure regional Australia?

**Dr Radcliffe**—Basically, I think the current COAG water reform, the ability to purchase water and the separation of water titles from land titles will encourage water to move to higher value uses. The National Land and Water Resources Audit shows that, for example, if you grow vegetables, you could get \$1,295 per megalitre of water, whereas, if you used water to grow cereals, you lost \$9 per megalitre you applied. There is a complete range. For some industries, such as the vegetable, fruit, viticulture, nut and cotton industries—although it is often criticised, I think the cotton industry technically is quite a good industry—it is good. Rice, on the other hand, has a much lower return on megalitres of water applied.

**ACTING CHAIR**—Would you say that one of the problems is that water distribution is sometimes in different areas and the infrastructure is not there, so it is very hard to get those prices in all areas or for them to operate on an equal basis?

**Dr Radcliffe**—It is difficult to make comparisons because a lot of the distribution is a function of the history of how all these areas were developed, how freely available the water was, what form of infrastructure was put in and what it was initially intended to be used for. You see a lot of changes in the Riverland, for example, where there has been a vast movement away from canning fruit and that sort of thing to grape growing. A salutary experience, and one of my dubious experiences as Director-General of Agriculture, was running a vine-pull scheme in the 1980s, and of course the industry has blossomed very substantially since that time.



**Mr FORREST**—I will make one final comment about the potential for desalination. We have not talked about that yet. Is that something that you are interested in and can offer comment on?

**Dr Radcliffe**—I think desalination has uses in particular circumstances where alternatives are not readily available. For example, we have a desalination plant at Penneshaw for a small town. I can see scope for desalination in small communities in the arid areas. One of the problems in the arid areas is that you might have a town of 10 people, and 10,000 tourists pass through it in the middle of the year. None of them contribute much to the infrastructure, but they would all like to use the loo because it is the only one within 200 kilometres. It is very difficult for a place like William Creek in northern South Australia. A major cost is running the public toilets in these small communities where all the travellers pass through.

I think there is scope for desalination. In the City of Perth, for example, the Western Australia Water Corporation has looked at the possibility of desalination in the long term. Singapore currently gets most of its water from Malaysia. It has put in a major water recycling plant, and they produce something called 'new water'. I was at a conference recently where we were all given a bottle of that 'new water'. I was asked whether I had drunk it yet, and the short answer was, no, I had not.

**Mr FORREST**—It is psychological.

**Dr Radcliffe**—Exactly. But I would rationalise it: a bottle that is full of water is probably a more impressive exhibit than one that is empty and just a bottle. So I have a rational argument. It is probably not morally defensible, but that is another subject. Singapore has a major desalination plant being installed, but you are dealing there with a very high-value, small-catchment-area, big-population community. But there are also quite large areas, particularly in California, where I am told that desalination is increasing. If water were to go to a higher price—if the price of water doubled, for example, in real terms—I think desalination would tend to become more attractive in some areas. Whether or not it will ever be attractive in terms of agricultural use is probably arguable. It is probably better to move the agriculture, I would say. In terms of industrial use, it may well be the case, and there is a considerable amount of recycling of water now for industry.

A good example that I saw recently was the Luggage Point Wastewater Treatment Plant in Brisbane. There is a contract between Brisbane Water, which is owned by the Brisbane City Council, and BP Australia to provide something like 10 megalitres of water per day to the oil refinery. It has gone through a microfiltration process, a reverse osmosis process, so the water is very low in salt and can be used in boilers with no ill effect. It proved to be a more satisfactory solution than bringing a large water pipeline to a fairly distant location which happened to be close to a waste water treatment plant.

**ACTING CHAIR**—As the committee has no further questions for you, Dr Radcliffe, we thank you very much for your contribution and for your papers.

**Dr Radcliffe**—Could I just add something. The back of the chart I gave you indicates how many megalitres of water per annum were diverted from the River Murray, what was used in metropolitan areas, what was used in the country, the amount used for irrigation, evaporation and seepage, and the total use in relation to the South Australian entitlement as water comes

over the border. We have not talked about it and we probably do not need to, but the information is there.

**Mr FORREST**—Could you give us a source for any information about that desalination project in Brisbane you mentioned, with the fuel company? Is there a source for any background on that that you could offer?

**Dr Radcliffe**—Further details? Yes, I could probably give you some of these references.

**Mr FORREST**—They are probably providing a gas turbine, or something, to create the power.

**Dr Radcliffe**—I have a paper here on the proceedings of the International Water Association conference in Melbourne 2002, and it was published. I do not know whether you would like to make a photocopy of it, as a matter of convenience.

**ACTING CHAIR**—As it is a published paper, perhaps we could just get the reference.

**Dr Radcliffe**—I do not know how easy it is to get it, but it is the proceedings of the IWA conference Melbourne 2002. The paper is by Lisa Hopkins and Keith Barr from Brisbane Water, and it is entitled *Operating a water reclamation plant to convert sewage effluent to high quality water for industrial use*.

**ACTING CHAIR**—Thank you.

**Mr WINDSOR**—John, is the capacity of the Salisbury scheme, the Michels project, 1,500 megalitres?

**Dr Radcliffe**—I think it is 1.5 gegalitres per annum. This year they will use 1.1 gegalitres, but I think the capacity is 1.5. That is their ultimate demand, but water is in short supply this year. I think there is a greater capacity in total, so there is potential for marketing the water to other industries. It raises an interesting question about who owns the water. Salisbury council is receiving the revenue for selling the water, but they are negotiating with the state government to perhaps resolve that delicate matter. I think you had better get advice directly from them about how all that operates.

**ACTING CHAIR**—As there are no further questions, I thank you for appearing before us today.

[11.31 a.m.]

**DONNER, Dr Scott Charles**, Executive Officer, Natural Resources Committee, South Australian Farmers Federation

**MARTIN, Mr Kent**, Chair, Natural Resources Committee, South Australian Farmers Federation

**ACTING CHAIR**—I welcome witnesses from the South Australian Farmers Federation. Although the committee does not require you to give evidence under oath, I should advise you that these hearings are formal proceedings of the parliament and, consequently, they warrant the same respect as proceedings of the House itself. It is customary to remind witnesses that the giving of false or misleading evidence is a serious matter and may be regarded as contempt of parliament. Do you wish to make a statement in relation to your submission?

**Mr Martin**—Yes. In its submission to this inquiry, the South Australian Farmers Federation really tries to deal with local South Australian issues as we see water management applying to this state. Although we have definite philosophical views on national water management, I would like to base my comments on the South Australian perspective because that is where we work at this level and where we are really involved in trying to get things done in this state.

As we stated in our submission, we see a number of important issues that we think are absolutely essential to water management not only within our state but within Australia, and they are that the environmental flows must be maintained; potable supplies throughout the state must be of adequate quantity and quality; and the real value of water must be used to assess how we deal with our industries and how they are restructured. We actually have a fourth one that is implicit in all of this, and that goes to how we can engage with the community to make these things happen. This is the area of some of our particular expertise within the federation—that is, how we engage the community and try to get things done.

The overall tenet of our submission covers three main areas. One area is surface water. I guess the most pressing issue with that is the Murray-Darling catchment, which has a huge impact in our state. Probably the most pressing issue we see with that is infrastructure, because this immediately has an impact on the environment and on productivity. As I progress with this, you will gather that I come from the south of the state and I irrigate from an aquifer where we use pipes. When we get a hole in a pipe, we fix it up. So it is as a fundamental issue that I see the huge loss of water there is through delivery in our surface water system. In this area, we see that there is a great need for research and development to look at innovative ways. It is well and good to speak of millions and millions to replace pipelines, but there must be other mechanisms that can be used in the short term to fix channels and stop the dramatic leakage we have.

We also see as a really important area with surface water the need to make sure that cross-border trading works properly. There seems to be a whole range of issues at the minute that prevent this from working in a manner that helps attain better use of water and helps restructure different industries, because the reality of the world is that industries will need to be restructured.



**Mr FORREST**—Do you mean state borders?

**Mr Martin**—Yes, state borders. The other surface water issue that we see within this state is that of wetlands. Wetlands have a particularly significant part to play. We have a wetlands strategy in this state, and one of the major programs in the upper south-east is the upper south-east salinity and drainage program. The wetlands strategy there is particularly significant in making this work properly. We have significant wetlands, and a number of them are Ramsar sites—the Coorong and Bool Lagoon—which need to be protected properly. These are an important part of the future of rural industries in the country, because the Ramsar listing affects you in certain ways, but there is also the potential for a whole range of tourist industries.

The other important one, which I guess is a subject dear to my heart down in my area, is Lake Bonney, which has been used, under an indenture act, to run waste water from the pulp mill down there. By world standards, this is an important lake. I find it interesting that we can look at the Blue Lake, which supplies potable water for Mount Gambier, and have a set of rules for that and yet a few kilometres away we have a big, 30 kilometre long lake which would be utilised brilliantly in other countries for tourism and we pollute it and have no qualms about doing so. I think those issues need to be thought about quite carefully.

The other important issue with surface water, particularly in that upper south-east drainage program, is the interrelationship in water management with biodiversity and native vegetation. The whole of the funding mechanism depends on that interrelationship, and a great part of the hydrology impacts depends on that relationship between native vegetation and cropping. So the integrated natural resource management is really important in the long-term water management. You need all these things together. It is very difficult, or near impossible, to do them in isolation. All through this presentation, I will be talking about the need to have the community on board. You need to have good legislation that the community supports and actively participates in.

The other area that is particularly significant is ground water, and that is an area that I am conversant with and deal with. The first issue, which has been dealt with well in South Australia—although the delivery might have had many problems, as I guess is the case in other areas—is the delivery of a property rights system for underground water. There have been many difficulties, but it actually does give you the ability to manage that water in a proper way—although, as I said, there has been a whole range of poorly thought-out mechanisms to deliver it to the community which have caused a lot of anxiety and angst.

One of the things that is particularly noticeable with the management of underground water—and I think a good example is in the south-east—is the complete differences in what you need. In the upper south-east the problem is a rising watertable with problems of salinity and flooding of native vegetation.

**Mr FORREST**—Could you put some place names on some of those upper south-east towns? We are not locals.

**Mr Martin**—I do apologise. The upper south-east is from Bordertown down to Naracoorte, and the lower south-east/mid south-east is classified as from Naracoorte to the coast.

In the northern section, as I said, the problems are a rising watertable, salinity and flooding. The program going on up there, the upper south-east drainage program, is large by international standards. It covers drainage, revegetation and productivity improvement. In its present form, it is running into another \$50 million. So it is a large project. But the problem there is water going up and the effects of that.

In the lower south-east, where there is an excellent quality aquifer, the problem is the opposite: the watertable is dropping, and so you have to have more constraints on that. That is being addressed by allocation reduction. That needs to be done sensitively and equitably, otherwise you have huge community anger—which is what I am dealing with at the present time. We are also having volumetric conversion there which allows you, if it is used properly, to get not only biodiversity and sustainability improvement but also productivity improvements.

Also, most interestingly in this state, forestry has been taken into account and we are in the process of developing a water allocation for forestry. Everybody has different perspectives on this—everyone I deal with in the forestry industry will give you a slightly different perspective—but the reality is that native vegetation and forestry have always had a water allocation in the bottom part of the south-east, and it is now being formally recognised. So this is a more sophisticated way of dealing with underground water.

With the potable supplies, the important issue is that South Australia is such a small state—it is really a city-state. A million of the population live in Adelaide, and the largest city outside Adelaide, Mount Gambier—near where I come from—has a population of around 23,000. So, basically, when you talk about urban, you mean Adelaide and a couple of the larger towns, and the rest is country. The important issue with urban water usage is to make sure that we look at innovative ways to limit water use, not just expect a continual increase in accessing more water. Indications are that Adelaide pumps out more to the sea than it uses. It seems a crazy waste of water to be continually pumping it in from the Murray, capturing it in the Adelaide Hills and then having problems disposing of it.

However, there are good programs. When you look at the way water is used in the Northern Adelaide Plains—recycled water—and in the south, you see that the programs have taken a lot of perseverance to get in place. They have been a long time in the coming, but they show good community involvement in how water can and should be recycled.

One of the really heartening things happening at the moment is the drought-proofing program they have for Adelaide. I find the make-up of that committee really interesting, and it highlights the closeness in this state between urban and country and how we need to be involved in it. There is also a need for a whole program of involving the public in understanding just how valuable and finite the water resource is. People gladly say, 'We realise it's valuable,' but I am sure that people do not realise just how finite it is, that there is a really limited amount.

I guess, for us, the last issue is probably the most important of all, and that is how we engage the actual community. It is all very well to have wonderful management programs but, if community does not support it and actively understand and be able to implement it, it is really a waste of time. I think we have catchment boards in this state and we have other mechanisms that we are developing for this integrated style of management. I cannot stress and highlight enough how important it is that we have skilled people not just in the resource but in actual

management and understanding of people and how we manage the issues because, if we do not manage them correctly and you get the community offside, the whole process is basically lost.

**ACTING CHAIR**—Let us introduce ourselves. I am Dick Adams, deputy chair. I am the Labor member for Lyons in Tasmania, which is mainly in the middle of Tasmania and is 60 per cent of the landmass of the state. It has a lot of water and lakes and things.

**Mr WINDSOR**—I am Tony Windsor from the electorate of New England in northern New South Wales.

**Mr FORREST**—I am John Forrest, Victorian member for Mallee, which is just over the border there competing for that ground water.

**ACTING CHAIR**—I thank members of the committee for that. Does the federation see itself as an educator?

**Mr Martin**—Yes. We are actively involved in a number of negotiations where we try to take a leading role in involving the community and understanding their rights and responsibilities, basically.

**ACTING CHAIR**—Do you get any help from any levels of government for that?

**Mr Martin**—Not for financial support. We do get substantial support from the bureaucracy. I do not like using that word but they do substantially support us with information and involvement in program setting.

**ACTING CHAIR**—Are farmers in South Australia now better prepared for droughts? Are they drought proofing? Are they taking that concept that drought is a part of Australia's climate and that we have to learn to live with drought and operate within it?

**Mr Martin**—Yes. You need to think of South Australia at a number of levels. In the pastoral country there has been a marked change in how they view drought and the amount of times it catches up with them. Part of my prior life was involved with the soil council in this state, and 10 or 12 years ago drought was viewed as an occasional occurrence rather than the other way around: we live in a very dry state but occasionally have good years. In the mid part of the state farming has changed again markedly with low tillage and nontillage cropping where people are taking a very active role in drought proofing themselves in that way. In the south of the state they are taking a much more responsible attitude towards water usage, particularly underground water.

**Mr WINDSOR**—In terms of your submission, I note one thing here:

To achieve these ends a series of measures need to [be] addressed;

\*COAG 1994 outcomes delivered

That is a fairly sweeping statement. What has not been delivered that should have been? What needs to be delivered?

**Mr Martin**—When we looked at that, we were actually starting to look at the implications of property rights for water and where that took us. It has been not only from when we wrote that; there has been an ongoing debate about the implications of COAG on property rights for water—particularly underground water which, for many people, is a much harder concept to come to grips with. You can visualise a river and your ability to access it with a long pipeline, so you can come to terms with property rights for that. But if somebody is standing on top of an aquifer which catches water that they cannot see and they are told that they do not have property rights on that, it is a much more difficult concept to come to terms with. That is why it is essential that that allocation of aquifer water is done correctly. That has not always been the case. I guess that was our original concern with COAG. Then there is the issue of how we value water and the implication for industries of there being no cross-subsidies. You would get a distinction between authorities and how they work with it and how they administer it. There has been some difficulty within this state, from our perspective, about the administration of water regulation. I guess they were the beginnings of where we made a broad statement like that—how it affected us, basically, and the important issues for us.

**Mr WINDSOR**—So there is the outstanding issue of non-recognition of property rights. Just remembering that this is a national inquiry and most of your submission has been about what is happening in South Australia, we are trying to pick up on the relationships and what the national government can do in terms of assisting with some of these issues. It seems to me that one those issues is national recognition of a property right. What role do you think the federal government should play in relation to that definition or is it solely the definition that the state of South Australia puts on the property right? Do you see it as a federal issue at all?

**Mr Martin**—I believe it is a federal issue because, in my position, I sit on an environment committee of NFF and I have some involvement with the other states. You hear the same problems coming from the other states about this sort of bitter dispute about how people access a property right of water and what their interpretation of a property right is. One of the real difficulties is that it is not as though we are starting with a clean slate. In actual fact, many people who had a water allocation viewed it as a property right and then had it basically regulated and given to them as a prior right, which we believe is the correct thing to do under the circumstances. It is not necessarily the best thing to do, because of the angst and inequity that it causes. But we believe that the federal government can play a strong role in pushing for uniform property rights, and this is one of the difficulties that I hear when I work at a national level: different states all have a slightly different view of what this could mean, particularly its implications for compensation.

**Mr WINDSOR**—This is a bit from left field; you may not be able to tell us: how much water is in Lake Alexandrina?

**Mr Martin**—If I were flippant, I would say not a lot.

**Mr WINDSOR**—What is its normal holding capacity?

**Mr Martin**—I cannot answer that; I am sorry.

**Mr FORREST**—I am going to go to one of those difficult points. When you were talking about ground water and the right to have access to it, the reality is that ground water is recharged somewhere else, particularly for South Australia—it comes from my area

underground. So it is a bit of a tricky cross-border issue. Just in the spirit of trying to solve the difficulty, my anxiety is that the South Australian ground water system is not secure at all, but people think it is. There is no systematic recharge occurring. There is no approach anything like what is done in Texas, for example. All of their programs are designed to recharge; two-thirds of the state's water supply comes from a ground water system similar to the limestone ridges underlying where you are. Are you confident that there is security for that water system? I am not.

**Mr Martin**—The allocation system is based on reasonably good figures. We always need better monitoring and better figures; no-one would ever say that we have adequate figures. The whole structure is about what they call 'the permissible annual volume', which is about managing the recharge and the extraction. That is why, with this forestry allocation, which is really a first in this country, we are also limiting the extraction right at the beginning—or attempting to.

**Mr FORREST**—That is the concept that the trees use more and, therefore, it does not recharge. De facto, they get an allocation as a result of that.

**Mr Martin**—Yes, and they have always had an allocation. Basically, it was always a de facto allocation that was taken into account but never properly legislated for. I believe that there is quite good administration of the aquifer down there. There is a border-sharing agreement and there are significant differences between the areas on which they administer the water there. The water is administered on a per hundred basis. It would be preferable to administer it in hydrological areas. That was attempted; however, it failed because of the legislative problems. It is really easy to defend a hundred in the court system. The minute you try and defend a hydrological area, you have 10 scientists saying this and another 10 saying that, and you immediately have a side issue that will detract from the real argument. There is a genuine effort, with quite strict controls. There are hundreds up in the north of the region which have accepted 30 per cent and 40 per cent cutbacks on their irrigation allocations because of the necessity. Again, there are areas in the north where there are concerns about salinity increases because of the water use. The wine industry is putting in substantial amounts of money to do research into this area.

**Mr FORREST**—Probably a good example, in response to Mr Windsor's suggestion, is that the Commonwealth could, maybe, provide some leadership in securing that water and having a wider scale approach to recharge. Is that something you would like to see?

**Mr Martin**—We have always believed that the Commonwealth's role was to show leadership. I live on the border and I see the problem of states squabbling and having different regulations. I guess we have always seen that the Commonwealth has a role to play in leadership and in taking control of some of the border squabbling, where people could not agree to the difficulties of different regulations.

**Mr FORREST**—A lot of my people sit there and look at all those big centre pivots on your side and they are not allowed to use them; they are denied them. That is a problem.

**Mr Martin**—I know, and that is a major problem. I also have constituents that get your kangaroos out of national parks in South Australia.

**ACTING CHAIR**—There is emphasis in your submission about the need for education. It was very heartening to see that role from the federation, because I think it is an important role. How well informed are community groups, farmer groups and groups such as catchment groups or groups out there endeavouring to come to grips with some of these issues? How informed are they in South Australia?

**Mr Martin**—Reasonably well informed. The level of information has improved so markedly over the last five to six years; the uptake has been enormous.

**ACTING CHAIR**—This is good data?

**Mr Martin**—Not only data but concepts of how you need to manage it, concepts of ownership and property rights—the whole spectrum that six years ago, you could say, was not well known within the general community, other than amongst people in specific management areas, such as on a catchment board, a water resources board or a soil board. In the general community it was not particularly well known. But in the last five years, particularly because of the implications of property rights, people have become much better informed.

There is a requirement in the South Australian Water Resources Act that certain consultation procedures take place. In the beginning these were not well attended but, as people can see the implications of how management is affecting them, they are taking a much greater interest in them. There is an impact on the urban community. The realities of water usage are coming home much closer. In, I think, the Sunday paper there was a section about the impact of the drought on Adelaide and some of the visual impacts and how it impacts on the industry. There is a much greater awareness of the implications of water management.

**ACTING CHAIR**—Is that going to force some industry change in the way that we do things using water in a sustainable way in some areas where we may not have done so in the past?

**Mr Martin**—Most certainly. As far as agriculture is concerned, in the south, where we use aquifer water for instance, with the conversion to volumetric there is an implicit understanding that there will be an improvement in productivity by best use and best practice. There is also a much better understanding that there will be a need for a certain amount of water for the environment and that that has a genuine and proper expectation to get what it needs. This works its way right up into the north of the state where better practice and an understanding of how water needs to be valued has come into being.

**Mr FORREST**—We have not talked about water pricing. This is the really tricky issue. I was pleased to see that you referred to it in your submission. There is probably a greater willingness nowadays to realistically tackle it, but I could get into big trouble really quick where I am from if I say we do not pay enough for water in Australia to appreciate it. What is your federation doing to promote that debate? I am talking about domestic urban use as well as right across the board. We just do not value water enough.

**Mr Martin**—I can probably get into trouble faster than you can on this question. Our policy with all agriculture is that things need to be market driven. Basically, if all things are equal, you are looking at things being market driven. I represent a huge range of different interests which, as Scott would tell you, all have different needs and get particularly excited about different things. Water needs to be valued realistically, and that varies. For instance, one of the



complaints we have with the south-east water policy is that there is an assumption that owning water in the lower part of this state is a licence to print money, which it is not, whereas this is entirely different to the value of water in the river system, where it is obviously a licence to print money.

**Mr FORREST**—Because you have the pumping costs to extract it and so on.

**Mr Martin**—Yes. But it is not even that. It is about access to industries and what industries are viable within the region. There are not as many options down there. This assumption that it is just a licence to print money is not quite true. It varies throughout the state. For instance, at Coonawarra, where the top quality wine comes from, water is hugely valued and people pay full market price for it. In the area I come from, basically no water trading takes place. Water's value is relative within the state. But we basically support what the free market demands.

**ACTING CHAIR**—But what trading is taking place now? Is there much trading taking place in South Australia in the water market?

**Mr Martin**—You have to split it between the Murray-Darling and the south-east. In the bottom part of the state there is—

**Mr FORREST**—There is no doubt that water trading has revolutionised the politics. People have been prepared to pay for water to grow a higher value crop. If you are still growing grass for dairying in the south-east down there—is that where you are saying it is not trading?

**Mr Martin**—Slowly, and this is where the recognition is coming. This is part of what I alluded to before with the property rights: people are coming to terms with the fact that you can trade water. It is not a matter of selling it forever; it is a matter of dealing with it on maybe an annual basis or a biannual basis, but you actually trade in it for your needs at the time. There has been a remarkable change, if we talk about the south-east in that regard, and a sort of sophistication of the market and an acceptance that this is just part of common practice now.

**ACTING CHAIR**—You said earlier that it also depends on the marketing as to what you can grow.

**Mr Martin**—Yes.

**ACTING CHAIR**—There is a power and energy problem in South Australia. There was a report on regional Australia some years ago and the whole of South Australia does not have too much third-phase power; even a grape crusher becomes a major problem now if you want certain energy and things like that. Is that what you mean when you say that there are limitations on what you are growing and on what you can do with the water—or expansion?

**Mr Martin**—That is one limitation. But probably in the south the major limitation is markets. We did an exercise a little while ago to see what things you needed to start a new industry. You needed overseas markets; you needed things like being able to mechanically harvest and a range of things like that. There are limited numbers of things that you can do in the south-east. When water property rights first became available, there was a huge rush of the community to actually take up their property rights; there were all these centre pivots bought. People have discovered since that they may well have been better off investing their money

somewhere else. They actually thought water was going to be a marvellous investment, and that particular type of infrastructure, without actually doing the sums to see if they could make any money from it.

**Mr WINDSOR**—There is a broader issue here too, I think, between the way in which the market impacts on river systems as compared to ground water systems and the capacity to actually deliver water in another area. As I understand it, with a lot of the ground water systems, you just cannot sell it to another property and extract the same allocations in terms of—

**ACTING CHAIR**—Because the infrastructure is not there.

**Mr WINDSOR**—No. If the water is flowing down a river, you can pull it out down here or up there and you can reconcile the book. But if you are looking at alluvial sands and stuff, the same water is not necessarily going to be available 30 kilometres away. It is a much more complicated arrangement, and the market was actually designed for river water—stored water, river water—using the rivers and channels to deliver it as compared to the ground water systems that are not necessarily related and you can run into hot spot problems. So the market is taking a deal of time to try and deal those other things in that you cannot see.

**ACTING CHAIR**—Would that be true, in your opinion?

**Mr Martin**—Yes, and that is one of the areas where the federal component comes into play—how to develop that market system. Originally with COAG we were given this sort of trading and people took the river model to trade, and it is far more complex than that. If you take the south-eastern catchment allocation plan and management plan, there is a whole range of constraints about how you can trade your water, and it gets down to this little statement which says ‘subject to hydrological assessment’. There is the devil in the detail, and they can basically stop you doing anything.

**Mr FORREST**—The aquifer system is only a river system in reality; it meanders under the ground. If we understood a bit more about what it looked like, it might be a bit easier—do you think?

**Mr Martin**—It would be and that is why there is this huge need. We look to the federal component, I suppose, to help with research issues, because therein lies one of the major problems: adequate research and information.

**ACTING CHAIR**—It is one of the areas that this committee is certainly going to look at in its recommendations. That has come up in Queensland as well. As Tony has just said, we do not understand the water under the ground as well. There is also the area of where they are putting other water back underground to give it another new life; there is research going on there. We hope to have a look at some of that later on today.

**Mr Martin**—They are looking at that and the implications quite closely in the south-east. But the quality issue is far more difficult to deal with than the quantity issue that you put back.

**Mr FORREST**—I would like to thank Mr Martin for his contribution. It has been very enjoyable and relatable.

**ACTING CHAIR**—What is this lake being polluted down your way with the paper industry? I had the worst mine, the Queenstown mine, in my electorate and the old Queen River, which was pretty embarrassing. You say the lake has been polluted?

**Mr Martin**—In the development of the south-east down there, there was a paper mill at Millicent and there was a special indenture bill which allowed waste to go into the lake. In actual fact, there has been a tightening up of that process, and it was put to other uses after the Ash Wednesday bushfires. They used it to put a whole series of logs in it to store. I actually raised this issue last week at a meeting we had about research and development, particularly with the way, as I said, we look at and interpret how we value things. Everybody sees the Blue Lake as an icon. Mount Gambier gets its drinking water from it and there is a Blue Lake protection zone around it where you can do some things and you cannot do other things. But you have Lake Bonney, which is a magnificent lake, and 50 years ago it actually had living things in it. But now? But it is improving; it has certainly improved.

**ACTING CHAIR**—The Upper Derwent was the same. We had a paper mill on that for years that used to dump a lot of fibre in it. But they worked out that they were in the fibre business and that collecting it before it went in the river was good business. So after a period from 1930 to about 1994 or 1995, they worked out that it was better to do it the other way, but it took a long time. So good luck with that one.

**Mr FORREST**—What is the nature of the waste? Is it saline or are there other nasties in it?

**Mr Martin**—I am not sure of the actual composition of the latest lot because they keep changing and upgrading, and there is a large volume because it is a water-hungry process. However, they are using world's best practice to minimise the waste into it. Whether that is still acceptable or not is a question that the community needs to think about in the future.

**ACTING CHAIR**—We import \$2.3 billion worth of forest and forest products, so we have to come to grips with these issues to some degree. You made one point in your opening address in that you think the community has to come to grips with the fact that there is only a certain amount of water there. There is only a certain amount of water that falls. Is that what I heard you saying?

**Mr Martin**—Yes.

**ACTING CHAIR**—I know that the community does not think that way or I think most of us would understand they do not. Do you reckon we can get them to think that way and to reach that conclusion?

**Mr Martin**—I believe we can and I believe we need to be looking at our education program. We should not just use price as a blunt instrument to force people to do things, although I think in some cases that is probably necessary. But I am sure there are innovative ways of making people think about the issues. There is a whole range of simple things. I spend a lot of time in Adelaide. If you look at the styles of gardens in Adelaide, for instance, some people have very high water use gardens and some people do not. There is a whole range of issues where people at least need to think about the implications of what they are doing. There seems to be an unstoppable sort of assumption that you can just keep finding more and more water for people to use.

**Mr FORREST**—The reality is that Adelaide is not on water restrictions where every other city on the east coast is, and some of them at stage 3, actually.

**Mr Martin**—How much trouble do you want to get me into?

**ACTING CHAIR**—Thank you very much for your time and for your submission. It is very good and we appreciate it very much. We will continue to come to grips with the issues that we have to.

**Proceedings suspended from 12.16 p.m. to 12.59 p.m**

**ALLEN, Mr Martin**, Senior Policy Advisory, Water Policy Division, Department of Water, Land and Biodiversity Conservation

**HOEY, Mr Peter**, Executive Director, Murray Darling Division, Department of Water, Land and Biodiversity Conservation

**ACTING CHAIR**—Welcome. Although the committee does not require you to give evidence under oath, I would advise you that these hearings are formal proceedings of the parliament; consequently, they warrant the same respect as proceedings of the House itself. It is customary to remind witnesses that the giving of false or misleading evidence is a serious matter and may be regarded as contempt of parliament. I now invite you to make a brief statement in relation to your submission. Before you do that, if that is your intention, I will introduce myself. I am Dick Adams, the Labor member for Lyons in Tasmania.

**Mr FORREST**—I am John Forrest, the member for Mallee in Victoria.

**Mr WINDSOR**—I am Tony Windsor, the member for New England in northern New South Wales. Welcome to South Australia.

**ACTING CHAIR**—We have had some very good evidence this morning. Thank you for your submission. Would you like to make a statement?

**Mr Hoey**—Not particularly. We have made a submission and it is dated October. Martin and I are in a position hopefully to answer any questions the committee might have. Perhaps we could do a tag team on that.

**ACTING CHAIR**—That is fine.

**Mr FORREST**—Thank you for coming along and for your willingness to talk to us some more. It is one thing to make a written submission, but it is good for the process to tease out more information. It is a very genuine inquiry. All of us have great anxiety about the state of the nation, particularly now with the drought. My interests go immediately to providing some security, particularly in rainfall. It is the big issue for South Australia. I live just over the South Australian border so I have that big patch there with the same sorts of arid conditions. Your submission talked a lot about researching and monitoring climate and hydrology of water resources. I have been a bit disappointed in the Bureau of Meteorology and CSIRO, their emphasis being on understanding what is happening with global climate change and trying to model it better and so forth. Yet we seem to be passing by a magnificent opportunity which the world is engaging in in weather stabilisation, whether it be research to understand better how we can attract rain clouds to cover the continent or whether, when they get here, we can seed them and encourage them to rain and all those sorts of things. Cloud seeding, in particular, has been very badly discredited in Australia. China is spending \$A100 million a year, and South Africa, Israel, the United States and Russia—everybody except us—are investing heaps of money in trying to get better security into their rainfall. Does your department have a view on all that?

**Mr Hoey**—In my experience, we have over the years been assailed by some snake oil salesmen in this area, and that might have coloured our views. Just recently, for example, a

group of Russians came out—I do not know whether they went to Victoria as well—and they brought out some ionisation technology which was going to cause clouds to coalesce and make it rain. They claimed to be able to turn it off as well. The South Australian government were fairly sceptical of that arrangement, particularly in that the Russians were looking for upwards of a quarter of a million dollars for air flights, accommodation and so on. But we certainly entertained it, and they did come out here. We did not put forward any dollars, but we were prepared, through our South Australian Research and Development Institute, to set up a so-called independent trial—to set up a base case and look at various rain gauges across this state—and see whether there was anything in the technology. I do not want to give false evidence because I recall the opening statement, but I am not aware of the results of that. I am sure I would have been had they been successful. Since they arrived, I do not think we have got more than 10 millimetres of rain, and yet this was put forward quite genuinely by the Russians as something they could really do some work on. I suspect that has come to nothing.

As far as cloud seeding goes, we have watched the Snowy Mountains Authority with interest over the years. They certainly invested some time and money, and I think they might have run foul of other environmental interests, which is interesting. The forestry and conservation authorities in that area were concerned about increased flows in the streams, as I understand it, so that was an interesting play-off.

The Snowy Mountains Authority spent some money on enhancing rainfall in its catchments, for obvious economic reasons. I am not sure of where it has got to. I understand there is quite a battle. I am a deputy commissioner of the Murray-Darling Basin Commission, so I attend those meetings. About two years ago we were subject to quite a battle of wits and views between the CSIRO and an external provider in the cloud seeding area. In fact, I understand the Victorians—the then Department of Natural Resources and Environment—had some expertise in that which they made available to the commission as well to sort of try and nail down the issues. As I recall it, the Murray-Darling Basin Commission did not become very excited by the issue.

Quite an interesting proposal was put forward to cloud seed dirty clouds. The rainfall, the droplets, need a nuclei to gather around and gather the weight to fall. Clouds that have been polluted by industrial or urban areas appear to be favourable. So the clouds crossing Melbourne and heading across the Snowy Mountains catchments look promising. That was the theory put to us. I am being a bit vague. Certainly the South Australian government, I would have to say, has not got terribly excited, as most other governments in Australia have not, as you have pointed out.

**Mr FORREST**—I do not think I mind healthy cynicism—that is okay. I have been called a snake oil salesman myself.

**ACTING CHAIR**—I have just seen that John is in the paper.

**Mr Hoey**—My father was a water diviner.

**Mr FORREST**—It seems to me that things are fairly desperate. The prognosis is that there is a fifty-fifty opportunity for a break this winter, as we have heard from the bureau a few weeks ago, so we ought to be turning over every stone to see whether there are possible solutions under it. I do not sense desperation anywhere—certainly not federally and certainly not in each state we are in. We are in South Australia and that is why I am asking the question. I am aware



of the interests of SARDI, I have had discussions about the Russian situation and I have spoken to the director there. I drew his attention to this inquiry. He described himself as an optimistic cynic, which was at least a willingness to look at every option—not put any money on the table, but at least engage in some demonstration. The Chinese are very active—\$100 million.

**ACTING CHAIR**—We need to get evidence. You have to ask questions to get evidence.

**Mr FORREST**—That is a question; I want to tease it further. What concrete things are you doing about exploring that possibility?

**Mr Hoey**—I would have to say that it is very little, if anything. I think South Australia's interest—we are a very small state and have small budgets consequently—would be in contributing, with other governments, especially through something like the Murray-Darling Basin Commission or even nationally. I do not know what the Western Australians are doing, for example. I know that the Queenslanders are very advanced in their own predictive capabilities of weather and climate, much more so, for example, than we are. That might reflect a whole lot of things. I think South Australia would be interested to come in—not to go it alone but to come in—alongside one, two or three of the other larger states.

**Mr Allen**—Could I also add that a report was written some years ago—I think it was in the late eighties—called *21 options for the 21st century*. That was probably the last time that cloud seeding was considered amongst a range of other options. We are just starting a project called Water-Proofing Adelaide. That will look at a number of different strategies to provide more effective integration of Adelaide's water resources—stormwater and waste water reuse will be amongst those. We will also be looking at some of the other potential options to some extent. That would probably involve some sort of precis of the work which has been undertaken in Australia and around the world on things such as climate change.

**Mr FORREST**—I have a question on a different subject. I was intrigued to discover last week that Adelaide is not on any water restrictions at all, whereas 10 million people around the continent are already at different stages—some of them are at stage 3. I wonder what the rules are for triggering water restrictions in Adelaide. How does it work?

**Mr Hoey**—I will refer to a speech the minister recently made on this subject. He said that he has taken a very conservative approach to water allocations from the Murray. The Adelaide metropolitan area from Victor Harbor to Gawler is dependent for around half of its average water supply, and in dry years 90 per cent or more, on water coming from the Murray. We have been questioned by our interstate colleagues on the very question you raise. We will get our full allocation of 1,850 gegalitres by the end of the 2003 financial year. The amount of water saved by putting water restrictions on Adelaide would have done nothing for our present problems this financial year. Our main problems are below lock 1 at Blanchetown and particularly in the Lower Murray, where there are high salinities around Goolwa and very low water levels in the Lower Lakes. The analysis was done and the decision was taken that water restrictions this year, although they would have had a very large financial impact, would have done nothing to address those two particular issues. However, almost certainly—and this is a public forum, but the minister is saying it publicly—we are facing water restrictions for next year commencing in a couple of months time. It is likely that we will get less than our entitlement, and the government will respond accordingly.

You asked about mechanisms. In legal terms, we have got to do a bit of work on a couple of acts—one is our Water Resources Act—to enable us to very firmly put in place those restrictions. They are not robust enough at the moment to ensure the results we would require. The other piece of legislation is the Waterworks Act. The main supplier to Adelaide, SA Water, will receive a restriction at its off-takes on the Murray but they then must pass them on to the consumers—the householders, industries and businesses. Their own legislation, the Waterworks Act, also needs addressing, and that work is being done posthaste now. I think there will be some sort of announcement in the next month or so from the relevant minister about water restrictions for the coming financial year.

**Mr FORREST**—If it is any comfort to you, there are not any Murray River townships in New South Wales or Victoria on water restrictions either. So people are not paying enough attention. There is an assumption that the Murray is secure, and that cannot continue.

**Mr Hoey**—No. I was in Echuca recently and there was a lot of angst about South Australia and all this water sailing through to South Australia to make up our entitlement. While I am very sympathetic to the plight of New South Wales and Victorian irrigators, the reason that water came through is because of an 85-year-old agreement called the Murray-Darling Basin Agreement. But next year there will not be enough water to go around and the rules will go into a different regime, a drought regime, whereby the three states will share equally the water resources out of Hume as opposed to what happens now. The rule of the Murray-Darling Basin Agreement in normal times is (a) the water resources at Hume are shared equally between New South Wales and Victoria and (b) both those states provide an equal share of 1,850 gegalitres minimum to South Australia. Most of the time we get more than minimum. We get a lot more than minimum most years; on average we get 5,000 gegalitres a year across the border. This year we are going to get 1,850 neat, and I would put money on the fact that we are going to get a lot less than that, considerably less than that, next financial year.

**ACTING CHAIR**—Fifty per cent of Adelaide's water comes from the Murray, does it?

**Mr Hoey**—The notional figures are, I think, 40 per cent in an average year. Roughly 200 gegalitres is consumed from the Murray system in the Adelaide metropolitan area, and 40 per cent of that is 80 gegalitres in an average year. But this year—I do not have the figure at my fingertips—it would be much more than that. Back in 1982-83 the number was closer to 90 per cent of the then about 180 gegalitres. SA Water is capped, just like everywhere else. It is licensed and it operates under the South Australian part of the Murray-Darling Basin cap. So they have a window of water—650 gegalitres over five years—that moves through each year. But in any particular five-year window, they cannot exceed the 650 gegalitres without going out on to the market and buying it.

**Mr FORREST**—Where does the balance come from?

**Mr Hoey**—The balance comes from the Mount Lofty Ranges.

**Mr Allen**—I think the Mount Lofty Ranges has provided between 10 per cent and 90 per cent to 95 per cent. So there is quite a large variability from year to year, depending on the rainfall and run-off.

**ACTING CHAIR**—Did you say 90 per cent?

**Mr Allen**—Yes.

**Mr WINDSOR**—This is a national inquiry, of course, and most of the issues you have raised have been essentially state based. Given that the Murray-Darling system embraces four states, does the South Australian government see any role for the Commonwealth constitutionally in usurping the current role of the states and putting in place a better system than the relatively ad hoc process we have at the moment or are we in some senses wasting our time coming out here and talking to people? What role do you see the national government playing? I know you have a lot of ‘coulds’ and ‘shoulds’ in the recommendations, saying that they should talk to us and should consider what we say. But it is not very specific.

**Mr Hoey**—Yes. I can easily represent the minister for the Murray—the South Australian Minister, John Hill—on this aspect. He talks about a strong Murray-Darling Basin initiative having three main legs to it, if you like. Firstly, he talks about exemplary behaviour at home and he will list all the things we have not done and need to do, so we are not holier than thou. The second point he makes is about strong intergovernmental relationships. It does not work if they are not working, and I have to say that there is some work to be done there as well. The third one—he often lists it as his first, although he has not indicated any priority here—is to recognise that the Commonwealth has a unique role, an important, critical role, in the Murray-Darling Basin initiative, and it is quite different to that of the states.

Traditionally, if you look back on the Commonwealth role in the Murray-Darling Basin Commission and that of its predecessor, the River Murray Commission, it provided the independent chair; it played a role to bring warring states together right from day one, right from the 1900s, to cut through the issues; and it recognised that the Murray-Darling arrangements, even in those very early days, were a national issue. It sort of got in the way of Federation for a while; it looked like it was going to hold that up for a while. It was always seen as a very important national issue to be resolved.

Clearly, the Commonwealth have an environmental agenda, they have a water resources agenda. Even though the Constitution firmly places the management of land resources generally in the hands of the states, the Commonwealth unquestionably have a clear agenda there and they will influence it with finance and resort to external powers and so on. I think it would be a clear position of this government that we look to the Commonwealth to show leadership, especially where the tensions are big, as they are now, particularly on the environmental flows issue—and the other side of that coin is the property rights issue and so on.

**Mr WINDSOR**—I will cut in there, because I want to try and get a little bit specific. ‘Show leadership’ is a pleasant phrase, but to do what—provide money to put in place a property rights regime or provide money for structural adjustment?

**Mr Hoey**—The Commonwealth certainly have done that. The National Action Plan for Salinity and Water Quality is an example of that. Unfortunately it is a bilateral example. It seems strange to me that you have a national action plan and an NHT, for that matter, on a bilateral basis when you are working in a multilateral environment called the Murray-Darling Basin where there are in fact six governments operating. It would have seemed smart to me for the Commonwealth to bring those six states together, set the priorities and run out the funds with matching funds from the governments—there is no problem with that. The previous version of this government sold the Ports Corporation down here and it has allocated \$100

million to match the \$93 million that comes over the subsequent years through the national action plan. So we are well and truly matched up with the Commonwealth.

That is what I think the minister means by 'strong and unique' Commonwealth involvement in the Murray-Darling Basin. It is not just about running an agenda; it is about actually dragging people together and making it work on a comprehensive basis. Whether that be by finance, by knocking heads together, by education or whatever else, ultimately the solutions to the Murray-Darling Basin are political. It is not just a scientific problem and it is not just an economic problem; it is a total political problem which encompasses all of that.

**Mr WINDSOR**—When the COAG arrangements were put in place in 1984 the states and the Commonwealth came together and agreed on a process for water reform and a whole range of things were nominated. One of the things that was nominated—and with the National Action Plan for Water Quality and Salinity, the same thing applies—was that there be a 'compulsion' on the states to recognise property rights. That has not really happened. There is confusion. I think you referred to access rights being more important than property rights in this submission. There is confusion out there but it seems to me that it is saying to the community that, even though we have set up a process, we will give them the money even though they do not adhere to the process. I would have thought that in 1994 that would have been the Commonwealth demonstrating some leadership using its dollar power to drive it. What we have seen is the Commonwealth giving the money without providing the leadership.

**Mr Hoey**—I would make a couple of points on that and Martin might want to join in. Back in 1993, and even before 1993, when the work was being done, the focus of the Commonwealth and I think most of the other bureaucracies around Australia in the COAG arrangements for water was very much on microeconomic reform of the big water utilities: getting the pricing right, getting depreciation into the price and all those sorts of things. I would characterise the COAG agreement on water—that is, the water component—as having three parts. Certainly that was very much in the fore. The second bit was probably the property rights in the middle. Out the end was some vague reference to environmental flows and stressed rivers and a few things—and nobody, I can assure you, gave much attention to that.

We have moved through the reform of the water industries. There was a strong push by the Hilmer group, which preceded the COAG water reforms, to privatise. Some have gone down that path—in Victoria, for example—and others, such as ourselves, have gone the halfway route, where we have outsourced. All of that now is probably settling down. The reason I feel that property rights is firmly on the agenda now is because it is, to me, the flip side of the environmental flows coin. That was on no-one's radar in those days. It certainly is now, and I can understand the irrigators, particularly, and the big water consumers wanting surety before water starts getting handed back or taken back—or whatever phraseology—as to what is their property right. I think we are just in a phase.

There is a lot of work being done at the high-principle end through the COAG arrangements, which you would know. The chief executives group on water: their report to the Council of Australian Governments is to go forward setting a series of principles up. Where the rubber hits the road, and that is at the Murray-Darling Basin Commission end, they have a special project board dealing with expanding the very limited trial area we have got in interstate trade between Nyah in Victoria down to Goolwa in South Australia. I am not answering satisfactorily. What I am saying is that I think work in that area is progressing.

**Mr WINDSOR**—One of the things in terms of the principles is that each of the states would determine a definition of property right within the state. The National Competition Council will say that the original agreement was about the states making a determination. You could have New South Wales having a different definition from South Australia, for instance. What is South Australia's definition of a property right—irrigation-wise, for instance?

**Mr Hoey**—It is very much defined by the Water Resources Act 1997, which in turn identifies a mechanism to prescribe certain water resources. We have 20 to 25 different prescribed resources, of which the River Murray in South Australia is one. Once a government prescribes a water resource, it must start working out what is sustainable and what can be clarified in terms of a property right to take water out. That is done through the water allocation plan for that particular area. So, if you like, we have 25 different water allocation plans—I am guessing at the numbers here—in that area. So you have the Water Resources Act, the water allocation plan for the specific area, and then you have the actual individual licence to one but not to another and then maybe to another. That is how that works. That licence will contain a whole lot of conditions which relate back to the water allocation plan, in particular, and there are of course the carriage and the power of the Water Resources Act to enforce them.

So my answer to you is that they are quite specific, it varies in different areas and it all comes down to what is on your licence. One thing that will be on your licence is an allocation which is generally an annual allocation with no security attached to it, general speaking. In the case I mentioned of SA Water's allocation, though, that is a bit different because their usage of the Murray is going up and down like a yoyo, so they have this five-year window. They could have had a 10-year window, but I will not get into that. Martin, do you wish to add anything?

**Mr Allen**—Probably not. There is additional information; water rights are explained in the state water plan. It is a requirement to develop a plan, under the Water Resources Act. I think volume 3, which provides some explanatory documents, describes issues of water rights.

**ACTING CHAIR**—That is of catchments?

**Mr Allen**—No, that is in general terms. In terms of catchments, as Peter was saying, it is the water allocation plans; and, to develop those plans, a lot of scientific and technical work needs to be done.

**Mr Hoey**—The same as the New South Wales water management plans, I think they are called. I want to come back to something Mr Windsor said about Commonwealth involvement should the Commonwealth take an overview. Do you want to pursue that?

**Mr WINDSOR**—Just before you do, is it fair to say that the South Australian government is happy with the interpretation of the 1994 COAG arrangements in terms of the definition of property rights?

**Mr Hoey**—Yes. We believe we have always been there with property rights, so it was never an issue with the NCC as they come around year after year to assess compliance with the COAG reform agenda. There are no problems with domestic property rights. It gets a bit more concerning when you go into the interstate trading, which really has only commenced here since about 1995, 1996 or something. We have had property rights fully tradeable on a permanent basis in this state since 1983, and that precedes Victoria. Victoria often claim they are the first,



but they never had a permanent trade in water in 1983, and we did. So we have been in this game a long time.

Our interstate trade, until the last couple of years, has not been great. Now that is becoming quite an issue. We are pulling in permanent water from Victoria and New South Wales, and you are taking out what we call annual or temporary water in fair volumes out of South Australia, depending on the circumstances you are in. That is a fairly dynamic arena there. The second part of my answer is that we are probably a little less certain about that and we look forward to the work that the Murray-Darling Basin Commission Project Board are doing.

**Mr WINDSOR**—Do you want to follow up on the other issue?

**Mr Hoey**—It is often said, ‘Hand the Murray-Darling Basin Commission over to the Commonwealth.’ We are advised that there would be a couple of constitutional problems if the Commonwealth just wanted to enter the field and take over the responsibility using some sort of external powers approach or something like that. We have had advice, which has been pretty consistent, that it would be difficult and might circumvent sections 99 and 100 of the Constitution. I am not a constitutional lawyer, so I would not go further than that.

The second point is that maybe the states might cede powers to the Commonwealth. That is conceivable. I cannot really conceive it for upstream states, though. I do not know what South Australia’s view would be on that. We are presumably the most likely, being the downstream state, to want to go that way. You often see South Australian politicians at the federal level advocating that at times. The trouble with that is: can you imagine New South Wales—your state, Mr Windsor—ever conceding that power to the Commonwealth? There is another nice little point to go with it. Under the Constitution, the Commonwealth cannot be discriminatory. So, if four states by some miracle handed over their powers of water resource management to the Commonwealth, you would probably have to hook in Western Australia and Tasmania as well, making it impossible. The third point concerns a change to the Constitution. Good luck; I will not be around for that.

The fourth point is that, purely from a South Australian point of view, we have had an ‘equal’ voice at the commission since 1915. It is a unique intergovernmental arrangement. We veto things, as other governments that are party to that agreement are able to veto things. I am not wishing to stress the word ‘veto’ because that is not the way the commission works, but we work towards always knowing that someone can put the brakes on things. Why would South Australia want to give up that position to some presumably Commonwealth appointed body? We have 24 MPs in the House of Representatives and the Senate combined—soon to be 23. What is the total number of Commonwealth politicians—about 230 or something? It just does not make sense for us to hand over the power that we have had since 1915 to become just another player, an eight per cent player, in the field. That does not stack up for me. These are my own views, by the way.

**ACTING CHAIR**—To have structural reform where it is needed—and you can talk from your experience on the Murray-Darling Basin Commission—some adjustments will probably need to be made. Do you see that as a role of the Commonwealth and the states together?

**Mr Hoey**—Yes, I think it is a classic role of the Commonwealth to make that happen. There are a couple of examples where—I am out of my depth here—the Commonwealth has gone it



alone perhaps with the dairy industry and, more recently, the cane sugar industry. That is just my reading of it. What we are looking at now, with a call for a substantial restoration of flows in our streams—initially the River Murray, but it will spread everywhere—is some sort of transfer of wealth and opportunity from one group of players to another group of players through a conscious decision of elected governments. There, I think, is a case for structural adjustments to sort of manage that transitional process. Some people worry about the goalposts shifting all the time and they want certainty. There is no certainty in anything, but if governments consciously make decisions that affect livelihoods I think there is a strong case. Particularly with regard to your question about Commonwealth involvement, I am convinced that there is a key role for the Commonwealth in working with the state or the states over that issue and getting some consistency across the country.

**ACTING CHAIR**—Your submission says that the South Australian view is that ‘water property rights are more appropriately recognised as the rights to access water’.

**Mr Hoey**—Yes.

**ACTING CHAIR**—Would you like to explain that?

**Mr Hoey**—Martin might like to come in here, too. I think it is important semantically that, at the end of the day, the community own the water resources. When a government in South Australia comes in and prescribes a water resource, what it is saying is that this is a particularly important water resource, and it will start dividing up who has access to it. It is not saying that if you, Chairman, have access to 100 megalitres a year out of the River Murray you own that forever and a lifetime. I think it is a message we are trying to send about the uncertainty of the resource, and you have probably heard from other presenters about the need for the sustainable yield to be reassessed. Sometimes that goes downwards, and it goes upwards on other occasions, and good luck. Perhaps a better way of sharing the resources is by doing it in exactly that way: by a share, a percentage, of the resource rather than by a particular number. We have dabbled with a shared approach to water resources in the Eyre Peninsula, but I am not sure how far down the track we are on that.

**Mr Allen**—I guess the sustainable yield is something which can vary from time to time because of climate change or other impacts. For example, the Eyre Peninsula relies, to a large extent, on ground water of a reasonable quality. There happens to be a freshwater lens over the aquifer systems that are used in the Eyre Peninsula. That quality varies from year to year, or over a period of time, as do the water levels in those basins. It can fluctuate, depending on how much rainfall has occurred in the previous few years. Even over a period of five, 10 or 20 years, the sustainable yield can change if we have a significant period of lower rainfall—or higher rainfall for that matter.

**Mr WINDSOR**—What do you do in the circumstance where you have had a legitimate government allocate legitimate licences up to a maximum—it does not guarantee that you get your thousand megalitres a year—and there has not only been an overallocation but there has actually been an overuse of the resource before reaching the total amount of the overallocation? I do not know whether you have that circumstance in some of your ground water systems in South Australia, but how do you, under the existing regime, cater for those people who have made an investment geared on what a government legitimately issued them with, when there

has to be a cutback for the greater good? How do you handle that in the process, as distinct from wiping out a sleeper licence where there has been no real investment put in place?

**Mr Hoey**—Wiping out a sleeper licence can be pretty deadly, too. We tried that on the Northern Adelaide Plains a few years ago and we got into some serious community issues there.

**Mr WINDSOR**—But it is more where there has been an investment, a change in government policy for the greater good and an adverse impact on an individual.

**Mr Hoey**—Perhaps I can address that in terms of what is available to the minister under the present Water Resources Act 1987. In terms of allocation, if it is found to be overallocated we have a provision, section 37, where the minister can reduce the allocations across the board. As long as he does it across the board and for sustainable reasons—for no other reasons—he does not have to compensate.

**Mr WINDSOR**—So the individual wears it.

**Mr Hoey**—That is right, across the board. That has occurred here in South Australia in a number of locations—more often than not, not by ministerial fiat but by groups getting together. The three areas that I can think of in the last 15 years include the Angas Bremer prescribed water resources area, which was a ground water area but there is now a lot of surface water there. They voluntarily took a cut in the order of 20 to 30 per cent—I cannot remember the number; 29 comes to mind, but I might be wrong. There was a big cut across the board and everyone was down on allocation. It also happened in the Hundred of Stirling, which is a proclaimed water resource in the upper south-east of this state; and more recently, about three or four years ago, it happened in the McLaren Vale area, where there are very small volumes of ground water, but they trade at \$10,000 a megalitre or more.

The Barossa is trading at similarly huge prices per megalitre but in very small volumes. In that case we had what we call a sustainable safe annual yield of 7,600 megalitres per year, and it was all allocated out. The hydrogeologists did a survey. They were alerted to falling ground water levels and a few nasty little salinities popping up—those two things often go hand in hand. The hydrogeologists came up with a new sustainable yield of 5,700 megalitres, down from 7,600 megalitres. That is about a 20 per cent cut. A little more angst went into that.

**Mr WINDSOR**—Was there a 100 per cent usage of the 7,600 megalitres?

**Mr Hoey**—No, there was not. There were not metres at the time either. It was allocated out on an area basis. We were moving to a volumetric basis, and that, besides the falling ground water levels, is what triggered the hydrogeologists coming in and doing a check. The volume that was allocated was 5,700 megalitres.

There were transitional provisions for almond growers in that area—there were only a few of them—as growing a tree needs a lot more water than growing a vine, and in McLaren Vale it is nearly all vines. There were a few other oddities. There was a rose garden grower who produced flowers, and there might have been some growers of lucerne or olives or something. There were certain provisions giving them more time for the transition to the new arrangements, but no compensation was paid for that. They were fairly tough provisions, but it is in the interests of everybody that the resource does not get overused.

I think that the Namoi is probably in your electorate, Mr Windsor. That is an enormously tough problem, and I am not preaching on how you solve that problem by examples in South Australia.

**Mr WINDSOR**—I do not think that example you just gave demonstrates overuse; it demonstrates overallocation.

**Mr Hoey**—I am sorry; I did not cover overuse. In the case of overuse, which is probably the provision the minister will use in the coming year for the River Murray—he will say: ‘I’m sorry, there’s not enough water coming down and you are liable for overuse.’ He uses another section of the Water Resources Act—section 16—which is more of a temporary thing. It can last for one or two years while he gets more information. But he clamps down again as long as it is across the board, not singling anyone out, all being charged the same percentage and, for the reasons of sustainability—in this case short term—no compensation. Perhaps I should not announce ahead of time, but the likelihood of that happening in 2003-04 along the River Murray is extremely high, in my view. But I do not want to pre-empt anything the minister might have to say on that.

**Mr FORREST**—We are off to Port Lincoln tomorrow; we will be looking at a few things up there. Have you any insights you would like to tell us about before we get there? Most of what we will talk about will be the Murray.

**Mr Hoey**—I saw a summary of the submission of the board over there. They are very interesting people. It is ground water with a little bit of surface water, the resource coming out of the Tod. Down the bottom end at Port Lincoln, it has pretty well identified dryland salinity problems. The Tod was built in 1920 or something. It is a marvellous place, if you want to go out there. There is a museum and everything out there at the reservoir. It is only 20 kilometres out of town. But the Tod contains very saline water, and they are proposing to put a desalination plant on that. They have always shandied it with the ground water basins that are south of Port Lincoln. These basins, together with the Tod, which is just north of Port Lincoln—about the same distance north—pump that all the way to Ceduna and beyond. That water goes out to Denial Bay now, I think. Interestingly, with the Tod system, certainly the upper Tod—it is as dry as a bone in that whole region over there—they have another basin halfway up called Polda. Its ground water is only about a metre below the surface; you can stand there and see it. They dig a trench through the limestone, they put a roof over it to cut the evaporation and they just pump out of that. Polda was a marvellous resource, they discovered; a little bit high in nitrates, but that is all right. They pump that into Kimba. Polypipe was just coming on the market then. The Polda scheme was done in 1975. It is a much more recent scheme. The farmers hooked onto this system. The first bloke on the system is metered, but he then makes an arrangement with six other farmers, who might be 20 miles away, and the countryside is draped with polypipe. It is very interesting. Sorry; I should have summarised: the design area for that system is now three or four times larger than they ever expected it to be. They did not count on the ingenuity of farmers.

**ACTING CHAIR**—Is that for growing grain—wheat?

**Mr Hoey**—In that upper area it is stock water, so it is sheep. I do not know whether there are many cattle up there.

**ACTING CHAIR**—Wool?

**Mr Hoey**—Yes.

**Mr FORREST**—Stock and domestic systems?

**Mr Hoey**—Yes; the stock and domestic systems go for miles.

**ACTING CHAIR**—Thank you. We appreciate your evidence very much.

**Mr Hoey**—Thank you. We much appreciated the opportunity.

Resolved (on motion by **Mr Forrest**, seconded by **Mr Windsor**):

That this committee authorises publication of the evidence given before it at public hearing this day.

**Committee adjourned at 1.46 p.m.**