

**NATIONAL CONFERENCE OF PARLIAMENTARY
PUBLIC WORKS AND ENVIRONMENT COMMITTEES**

**"WATER—ENGINEERING SOLUTIONS AND
ENVIRONMENTAL CONSEQUENCES"**

TRANSCRIPT OF PROCEEDINGS

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THE RIVER MURRAY: GOVERNMENT INFRASTRUCTURE AND ENVIRONMENTAL NEEDS

HON. MIKE ELLIOTT (South Australia): I am a member of the Environment, Resources and Development Committee of the South Australian Parliament, and I will be chairing today's session. Dr Peter Cullen is our presenter. Peter has worked in natural resource management for 35 years. He was awarded the Prime Minister's prize for Environmentalist of the Year in 2001 for his work on the National Action Plan for Salinity and Water Quality.

Peter Cullen is a member of the International Water Academy and a director of Landcare Australia Ltd. He is a graduate in agricultural science from the University of Melbourne. He was founding Chief Executive of the Cooperative Research Centre for Fresh Water Ecology and served from 1993 to 2002. He has worked at the University of Canberra where he was Dean of Applied Science. He is a member of the Community Advisory Council, Murray Darling Ministerial Council and chair of the Scientific Advisory Panel for Lake Eyre Basin Ministerial Forum. His major professional work has been the areas of nutrient dynamics, nitrification, lake ecology and environmental flows. Dr Cullen.

DR PETER CULLEN: I am pleased to have the opportunity to talk with you this morning about one of my passions, that is, water and water reform. I gather my title page has a number of errors. I gather you are not the eighth but the sixth national conference. I will talk only loosely about that title. I want to talk about the River Murray but I want to talk about ways forward and issues that confront us as a society. The debates about water policy we are having are really about the sort of society and environment we want to live. So, from my point of view they are fundamental. As we allocate water to any new use, lots of traditional users have to give up that water, be they indigenous interests, agriculture, fisheries, environment or recreation. They must do with less water as we allocate it to other purposes.

The physical and institutional arrangements we have created to manage our water resources are designed to advantage some interests over others. The public investments we have made advantage some interests over others. Last night Ticky talked about social equity issues. They are very important but are hard to see our way through. The history of water development in Australia is really the history of articulate interest groups seeking particular advantage and, my goodness, that has never been more so than now when you listen to those various interest groups. They prefer to get advantage by public investment, and they have done pretty well through that over the last 100 years, as well. There is traditionally—and there always has been—a significant tension between the upstream and the downstream interests in any catchment or any basin.

It is interesting for me to reflect on those issues and to find that they have not really changed much over the last 100 years. Last year, I did some work with the Murray-Darling Basin Commission looking at the Corowa conference that was held in 1902. I will give you a

bit of history, because I find the challenges so parallel and so interesting. In 1902 the challenge was to develop a workable mechanism to manage the shared resources of the Murray-Darling Basin, and in 2002 we are in exactly the same situation—trying to find a useful way forward that satisfies as many of the competing interests as we can and gives us some long term sustainability.

Of course, the conflicts over the Murray delayed federation and was a burning issue for at least 20 years after federation—in fact, it has probably been a burning issue ever since. At the time of federation we had a royal commission that led to what is now known as the Murray-Darling Basin Ministerial Council. In 2002, the conflicts are all there. Environmental allocations, river health, water rights, compensation and how we manage resources in an integrated way are all again dominating the agenda. In 1902, before federation, state governments were all aggressive developers, all seeking to exploit and develop the water resources to advantage their particular state. Victoria led the way with significant state investments promoted by Alfred Deakin, the real champion of irrigation. In 1886, the Victorian Irrigation Act was a landmark that gave the Crown the right to use, flow and control surface waters. That was where we departed from European and American traditions, and it was probably an important decision. That was necessary if the irrigation developments that Deakin was promoting were to be realised.

However, at that time, of course, the states differed in their priorities (and I will bet there were some great debates in this house at the time). South Australia wanted the river developed to provide water transport and, had that happened, South Australia would have been the port out of which all the produce of the Murray-Darling Basin would come, and it would have been a very different economic future. Neither New South Wales nor Victoria saw that as a priority and, as railways developed and most states progressively put in their railways to get us away from river transport, that issue became less relevant. From the early 1880s, Victoria aggressively set about developing its tributaries for irrigation. There was development in New South Wales but still many assertions about ownership of water and the rights to develop it. As the New South Wales Premier of the time (G.H. Reed) put it:

New South Wales was not prepared to reduce itself to the status of a catchment for South Australia.

I do not know what he knows about biophysical realities, water flowing downhill, and so on, but he was not going to be a catchment.

Instead of water being a unifying force for federation, it was the real disruptor. We could not get agreement between navigation and irrigation. However, no-one could do anything without joint investment, because it was going to cost a lot of money, and they all wanted federal money. So, in 1902 the Corowa conference was called, and it was called the River Murray Main Canal League which, as far as I can see, was a body of New South Wales graziers, with their counterparts, who held this meeting in Corowa, and they also get the premises of the three states and the new Prime Minister. It was a community driven conference, but they got the political leaders there. Maybe we will have to do something similar.

The delegates to the Corowa conference were largely practical people, and all they wanted was that some government—any government—should give them assured water supply. What is different? At that time, we established the joint royal commission, and that led to the structures we now have. However, it identified two principles: that the waters should be divided proportionally between the three riparian states and we should try to manage the Murray as a unit under joint management.

When I look at that federation period, it seems to me that there are three key lessons we have learned with our water resources. There is a variety of economic interests and values, and some of them are argued much better than others. There are quite fuzzy notions about public good that lead to investment. What we did with massive public investment in irrigation structures in that early time was immediately transfer that to the land values and not ever recoup that investment in water charges. Again, interesting to think what we are doing in the Ord in exactly the same way at the moment: we are not recouping the costs of that structure through our water prices. The fact that we sold water so cheaply meant that there was no pressure to conserve it. Much wastage and much uneconomic use developed. The last lesson from that is that community pressures were needed to push governments to resolution. So, some interesting lessons from 100 years ago. I now want to come to the Murray-Darling Basin.

You are all aware that the Murray-Darling is our longest river. When you look at the hundred years of stream flow, it has varied at the mouth of the Murray from 1 600 to 54 000 gegalitres, and the mean is about 13 000 gegalitres. So, we are talking about a remarkably variable system, yet everyone keeps talking about averages. That is pretty stupid in a system so variable. I have been doing some work up on the Condamine, looking at some of the issues up there. The structures that the irrigators have built are designed to fill only one year in 10. That is a lot of investment for a very intermittent filling.

There are other aspects of the Murray-Darling Basin, some other realities. There are significant ground water resources. There is substantial salt in the landscape and, where we inappropriately irrigate, we bring that salt to the surface. We have led to significant over-development of the ground water resource and that has caused some hardship, as Ticky talked about last night. Because of the variability, there have been concerted efforts to store water, and we have built a lot of dams in the southern part of the system. What we have now learnt is that many of our water management structures have caused a lot of damage to the Murray Darling. We have over-allocated the water and degraded the resource upon which we all depend.

This is argued, but we have a laboratory at Mildura and my laboratory people assure me that the river flowed backwards last year. So little water was going over the Mildura weir that the Darling water was backing up to the weir at Mildura. The Murray Darling Basin Commission vehemently denies this and says that it is totally inappropriate, but the water is a different colour and blind Freddy could see that it was brown water coming up from the Darling. So, we are taking a lot of water out of that system. What we have is increasing

pressures on a decreasing resource, and I think Ticky explained that to us last night. What we have done is trap the winter flows, so we starve the rivers of flow in winter and run them bank full in summer, so that we have this seasonal inversion of the flow. Those rivers normally used to dry out in summer and run bank full in winter, but we have reversed that.

We have extracted a lot of water. We have built something like 4 000 weirs to help distribute the water, but those weirs block fish movement and have turned out to be ideal habitats for both blue-green algae and carp—not quite what we intended. We have built levies that have isolated the floodplain. We have only just realised, probably in the past 10 or 15 years, that the river is the channel that takes the dry weather flow but the bulk of the river in many of our systems flows across the floodplain. The river on the floodplain has to be seen as one, yet we have built levies to isolate the floodplain and built towns on the floodplain that need to be protected, and that has led to some of the degradation of river health we have seen.

We need to connect a river in a floodplain if we are to get native fish and birds and if we are to maintain the river red gum forests of Barmera, and so on. We created dry land irrigation salinity. Each of those problems has turned up. The organisations we have to manage our water are largely dominated by engineering approaches, and the engineering philosophy is very much a 'can do' philosophy, and it will love to get in and do something with lots of diesel engines throbbing. When I look back at this, much of that work has been treating symptoms, not removing causes.

We build evaporating basins to take the salty water rather than stop the salty water coming up, because of our land use practices. We dredge the mouth of the Murray rather than getting the flows right. There is a great temptation to go to engineering fixes, but historically they have not been all that effective and normally they have led to a new suite of problems.

I think we are all pretty familiar with the dry land salinity issue. The native vegetation we have has roots that go down and use the rain that falls: we remove that vegetation to plant shallow-rooted crops, we do not use the water that falls, the ground water comes up bringing salt, and we get dry land salinity. Governments are spending massive amounts of money now trying to address that problem, but it is really a wonderful paradox that, in a dry country like Australia—and we are so aware of the dryness of Australia—the most common form of land degradation is our land drowning in ground water. It is a wonderful paradox, when you think about it.

We know now that there are few relatively healthy river sections left in the Murray Darling Basin. Most of them are degraded and in need of some restoration. There have been a lot of damaging factors, some of which I ran through before, and we need to be thinking about how we go about restoring those. It is not just flows, there are a whole lot of things, and we need to be smart about where we intervene if we want to get a benefit. When I look back, one of the things that has not been evident in our history of the Murray Darling Basin is knowledge-based decisions. As a researcher, my job has been to try to produce that knowledge, and I will talk about that shortly.

One of the really tragic things to me about what is happening now is that, as the salinity goes up—and I am not sure we will be able to slow that, far less reverse it—what we are doing is putting salt in the water, taking that water out of the Murray system and dumping that salty water on our most fertile farm lands. That is pretty stupid in terms of long-term sustainability. We are going to sterilise that land, and we really need to think through just what we are doing there. That is why the salinity issue is so important and why I work with the federal government on the national action plan. It is easy to have hindsight in all these things, but I have tried to draw a few lessons from the last 50 years that I think are important for where we are now.

The first is that our rainfall is very variable, so planning on averages is silly. I am working on the Condamine at the moment, trying to work out some water conflicts up there with irrigation and the Narran Lakes, and so on. Everyone accepts this as a principle, but all the documents given to us by government have been about average stream flow. The words are there: everyone understands the words; but the reality is that we are working on averages, and I cannot see how I can sort out the averages for the Narran Lakes or a system that fills those dams only one year in 10. We have to think through it in a different way. So, averages are seductive but mislead us.

The large storages we have mean lots of evaporation. Again, you only have to go to Cubby Station, where one of the farm dams I went along was 27 kilometres long. I asked him how he got them so level, with his layers of levelling, and he said, 'Well, unless you can drive along the banks at 80k without bouncing in the car, you know they're not level enough.' That gives you some idea of how big those things are. They are shallow storages; they are five metres. You can imagine the evaporation coming out of that. The Queensland government has agreed they can go up to eight metres and that will reduce the evaporation. I hope the things do not fail and cause floods downstream.

We have learnt a bit about river health. Basically, river health is a function of the flow, the contaminants in the water and the habitat. The habitat is more complex than that, but I do not want to get lost in that. We now understand a lot more about river health than we did even five years ago.

We know that water planning has to be at the whole system level. They knew that 100 years ago. It was one of the principles that came out of the royal commission after Corowa yet we have not done it. We have managed the Murray without any understanding of the Coorong and how the estuarine parts of the Coorong connect with the Murray. That is true of most river systems in Australia.

We have had the words there—'we need to look at the estuarine and whole system or, in some of our inland systems, the terminal lakes'—but the reality is that we avoid it. You hear the diesel engines throbbing as we get the dredgers going on the Murray mouth and you

wonder whether they have a clue what they will do to the Coorong. It might be the right thing to do; I do not know.

Planning at the whole system level is translated into integrated or total catchment management—with which you all are familiar. We have to manage all these things in an integrated way, but it is still difficult. Of course, they are still hampered by the state boundaries. One of the exciting decisions, with which I have been involved over the past 10 years, is my work with the Lake Eyre community. It is an undeveloped water resource—in fact, there is not much water except, occasionally, there is a lot of water.

They made the decision that, in relation to the catchment committees for Coopers Creek and the Georgina-Diamantina system, it would be absolutely stupid to have Queensland and South Australian committees, so they have a single committee. The bureaucrats looked a bit shocked at that, but they did agree and set about making it work. On those committees we have people from agencies of both states. It is working well, but the community demanded that. They said it was stupid to try to manage the upstream of the Cooper and separate from the downstream—yet we so often try to do that.

I have made the point about rivers and their flood plains being one system, so I will not go through that again. You would be more familiar than I with the growing pressures on the Murray-Darling Basin, so I will not spend a lot of time on them.

Before I get into that, there are a few challenges on which I should have commented. We are going to double the population of this country. I do not know whether that will occur in 20 or 50 years—and it does not much matter from my point of view—but I think about how we will look as a country when we have doubled the population. Will we put those people into rural Australia or into Sydney or Melbourne?

I have been doing the Melbourne water strategy planning, looking at water supply for Melbourne over the next 50 years, and we are assuming a doubling of the population of Melbourne over that time. I would not want to live in it. Are we going to let Melbourne and Sydney grow uncontrollably, or we going to try to get people into rural Australia? If we get them into rural Australia, what will they do and how will we make it work? That is one of the big challenges for you.

I have been thinking about my vision for the Murray-Darling Basin. I think we will have to try to double the population in the Murray-Darling Basin. We need to double the GDP in the Murray-Darling Basin, and we will probably halve the area of land we are presently using for agriculture. There are some interesting challenges ahead. We have to halve the environmental impacts. There are some very big challenges for us.

We are not just dealing with the status quo but, rather, an increasing population and more pressure on land and water resources. Will our present systems cope? No, they will not; they are not coping now. If we look at the pressures on the system, agriculture seems to be

insatiable; it is using 75 to 80 per cent of the extracted water at the moment—stock, domestic, urban, fishing, environment and hydrology. It is not clear how the privatisation of the Snowy will influence the irrigation availability of water. I hope it is available at the right times for the irrigators, but I am not sure we have worked our way through that.

Of course, we have the indigenous interests. I think the indigenous rights to water and their biota will be the next big issue. We have gone through the land rights issue. Indigenous interests that talk to me say that we are turning water into a commodity, putting it into a market and giving it to a few advantaged people. As a result, indigenous people feel disadvantaged. What has been a traditional access to them is being given away.

I think you will find a lot of political pressure for indigenous rights to water over the next 10 years. That is already starting. ATSIC have discussion papers out and the indigenous interests are starting to realise they are one of the groups being short-changed as we dish out water licences to those who can scream the loudest. So we have escalating demands yet a decreasing resource because of salinity.

We have learnt a bit about maintaining the health of waterways. We know that if we take out too much water we can expect to lose native fish and birds, and we can increase the frequency and severity of algal blooms. The Murray-Darling Basin Ministerial Council has put out the 'Living Murray' document, which looks at the costs and benefits of returning 350, 750 or 1 500 gegalitres a year to the river. That is going through an interesting period of public consultation, through until early next year.

Even 1 500 gegalitres is given only a moderate chance of improving the health of the river overall. It will certainly improve some reaches. You should bear in mind that returning environmental flows is only one intervention. We need to do a lot of other things as well, including removing weirs and providing multilevel offtakes on storages.

Did you know that some of our storages give us what we call stratification? The water at the bottom of the storage is much colder than at the top. Burrendong Dam in New South Wales causes a drop in water temperature of the river of 10 degrees. I have known that for a long time. What I did not know until some of our people did some research is that the impact is obvious for 350 kilometres. It is not just a few kilometres until it warms up.

As a result, it has wiped out the native fish and turned it into an attractive trout stream. You can sort out the relative values of all that—that is a political problem. Biologically, that is what we have done, probably inadvertently. We can fix that with multilevel offtakes, but that is a fairly expensive engineering fix and one they have been avoiding.

The challenge for us is to choose the best set of interventions so we can make a difference. When we talk environmental flows we are not talking minimum flows. Australian rivers are used to drying up and floods and droughts. We are talking about environmental flow pulses that mimic the natural.

Many farmers believe that flood flows go to waste and that they should be allowed to capture them. Our present understanding is that those flood flows wet the flood plain and maintain a lot of things. The issue in the Condamine with Cubbie Station is that Cubbie Station has built big dams; they capture flood flows—there has been no water capture this year and everything is empty—and one year in 10 they will fill.

I think that is starving water from the downstream flood plain. Certainly, some graziers who gave evidence to the scientific review were claiming that their productivity had dropped 30 per cent because of that. Their land used to flood, the water would go deep down, and that would sustain the growing period the next year. Those floods are no longer happening, so there is a 30 per cent reduction in carrying capacity. That might be all right, but that needs to be a conscious decision by our society, not just an arbitrary decision by people who can build dams. So the flood plain and the periodic flooding is not wasted water but, rather, a critical environmental element and a critical production element in many of those systems.

I want to say a couple of things about the Prime Minister's Science Council. The Prime Minister's Science Council in May had a report on biodiversity in Australia. There are a couple of points here. It makes the point that restoring a system costs between 10 and 100 times more than protecting it in the first place. It seems important to me that we try to protect the few bits left in our system.

The Prime Minister's Science Council suggested there were three priority investments: aquatic conservation, broadscale vegetation clearance and preventing the production of exotic organisms. They are the three things that we reckon we get the best bang for the buck in terms of biodiversity preservation, and for other things. I have talked a little about a vision for the Murray-Darling Basin: doubling the GDP; doubling the population; and having water that we can drink and to be able to catch fish in the lower Murray. I would like to think that we can spend money on infrastructure that supports productive agriculture rather than repairing damage as we are doing at the moment. Instead of having to spend \$1.4 billion on salinity, would it not be great to build an international airport so that we could get our produce to Asia?

We are always playing catch-up—putting on bandages. We are never investing to create wealth, and to me that seems to be very unfortunate. I want now to get into politics, your business. I want to talk about the COAG water reforms and then I want to talk about what is beyond the COAG water reforms. You are the first audience to hear any of this, so these ideas are pretty rough and tentative and very much my own personal views. They are really to seed thought rather than being a blueprint for action. I will review what we have achieved with COAG, the essence of the COAG water reforms from 1994, pricing based on real costs, future investments to be economically and environmentally sustainable, clear water rights and trading, integrated catchment management and effective public consultation and research.

They were the key principles of the COAG water reforms and, as you are aware, payments were made by the National Competition Council to the states that could show progress. What has been the progress? I will run through what is a very personal view of the progress on each of those things. The pricing reforms have been quite effective in urban areas but quite poor in rural areas. Not many farmers are paying the real costs of their water, and they are certainly not paying any of the extra amenities: the damage they do to the environment. Ticky made the point last night that we are subsidising water so that we can subsidise exports. How smart is that?

Pricing reforms still have a way to go. Victoria is probably the nearest to full cost pricing of rural water. The other states I do not think are too close. With respect to investments being viable and sustainable, there is no doubt that the COAG water reforms have slowed dam building, and why that has been is not quite clear. One reason for the COAG water reforms was a view that we had over-invested in capital expenditure that was not paying off. We have certainly built all the cheap dam sites, and when Queensland tries to get private capital to build a dam, such as Nathan, no-one will put up the money. It is not a good investment for the private sector; is it a good investment for government? That has slowed but not stopped.

We will need more dams and they will need to go through some environmental and economic hoops. I think that Mike Young talked to you about the comprehensive system of water rights. Mike Young and Jim McColl are doing some very interesting work in trying to get to the principles underlying water rights. When I knew that Mike was talking to you about that I took that section out of my speech because it is a critical and fundamental issue that we get the water rights issue clear and there are some real blockages to doing that. The progress has been pretty slow. The problem, of course, is that state governments are worried that they will be liable for compensation if real or perceived rights are removed.

Victoria, of course, has given all of the existing water rights to the permanent water and has said that anything that is left is for the environment, which is not a great help for the environment. The other states are giving access rights to water for a period and then allowing periodic review of that, and that seems to be smart in the light of climate change and other factors. But the real failure of COAG has been that we have not been able to get the water rights issue clear and we have not therefore been able to get the markets working effectively. That will need a lot more attention and it is high on the political agenda at the moment.

In terms of water for the environment, we have had some allocations for some major wetlands, and I applaud those and I believe that they have been helpful. We have had pretty minor allocations for river health. New South Wales is trying pretty hard to claw back some water from many of its over-committed rivers. Victoria has made fairly minor allocations to river health and we are really battling with that. There are problems. Our knowledge base is tricky. It is not clear to us just how much we have to put in. We are getting better at it but we have weak planning frameworks and limited knowledge. One other reference for COAG was water trading, and I think that this area has been very interesting.

Because we have failed to get the water rights and the access entitlements issues sorted we have really limited trading. We have a pretty limited market. You can trade in the rice areas but you are not allowed to trade outside the rice areas. We have artificial barriers in the system to stop water moving out of the rice areas and into grapes or cotton. That seems a pretty crazy market to me. There has been some movement of water from low economic uses to high but not nearly as much as people would have expected from that sort of market. There are some barriers in that market. We need to develop a much more sophisticated market because there are environmental and economic constraints to it, too.

As someone said last night, water does not necessarily flow up hill to money. Integrated catchment management has been very patchy. It seems strong and, I think, quite successful in Victoria and South Australia, but other jurisdictions are really battling with it. I think that there is a lot of consultation. There has been consultation with respect to the Murray River environmental flows. We have improved public consultation, but whether we have improved decision making is yet to be seen. Research was a clear COAG priority, but one that received very little attention. From a researcher's perspective, we are still unable to answer all the questions that are being asked, and I will talk later about where we go with research; but it is patchy, it is under-funded.

I am running out of time so I will move to what I think are the next steps in the COAG water agenda. First, there is a continuing call for a national water policy, and I think that people are getting very tired of the whingeing and the bitching about our water issues: they would like to see some leadership. We are getting escalating demands for federal funding—levies and all that, but we will not go into that after last night. What we can agree on is that the system is not working to anyone's satisfaction. I will not traverse the territory of water access rights. Mike Young spoke about that. I think that his and Jim McColl's ideas are very appropriate. We need to take those ideas, work through them and just get those access rights cleared up.

There may be compensation for certain legal rights that we remove but there are a lot of asserted rights that are not real legal rights, and there is a belief that because people have been able to have a free kick and use our water for each of the last 10 years they should be compensated if we take that away. Well, I am not so sure about that. Someone has to look after the public interests here. However, where we have a clear legal right, I agree that we should compensate, but there are many asserted rights. I will not go any further into that. I want to pick up on strategic planning for our rivers.

I said previously that in the Murray-Darling most of our rivers have been degraded. Two have been not been: the Paroo River and the Ovens River. If we have two rivers that are not showing really serious impact, it seems to me it is important to try to protect them. I have been arguing for a heritage river system for Australia. I am now at the stage of playing around with these ideas. To simplify it so that we can all understand it I will strip away all of the factors that damage river health and just talk about flow extraction. I am going to break my own rule and talk about annual flow extractions because that simplifies it.

It seems to me that in those rivers that are undamaged we are taking out less than 5 per cent of the mean annual flow (that is stock and domestic) on those rivers and that has not led to much damage. A conservation river might be where we are taking out up to 15 per cent. With respect to a sustainable working river we can certainly take out up to 33 per cent and a managed working river up to 60 to 70 per cent. That idea must yet be tested but that seems to me to be quite an interesting strategic framework with which governments can work. If they allocate more licences on a particular river they might move it from a conservation river to a sustainable working river. That is a social choice which politicians have to make. I just want it to be very clear what are the consequences of that. So that flow classification is perhaps one way forward.

I have been arguing that we need a federal initiative in this area, and I would like to see us proclaim heritage rivers under the amendments to the EPBC Act. There are amendments before the federal parliament at the moment to allow the declaration of heritage places. If that gets through the parliament I would like us to look at declaring some of those heritage rivers as heritage places. The beauty of that is I think that then opens up the path to provide federal funds to do surveys of those rivers and to plan for them and provide funds for the implementation of those accredited plans, a bit like the model we are using elsewhere. I guess I get so angry that we are spending \$1.4 billion repairing damage and we are spending nothing to stop damage in new systems. So this is an idea to put a bit of money into protecting those systems.

On the matter of investing to improve efficiency of our water use, well, we need to improve efficiency both on the farm and at the system level. If we invest publicly we should be certainly getting that water back for the public. There are really interesting disagreements going on about just what is achievable with improving water efficiency. There are people who are saying that the Snowy decision just cannot be got by improving water efficiency in the system. There are others who are saying that that amount of water is in the error of our measurement of the system and we can find it without much effort.

That battle is raging on at the moment and I do not have a position on that. I just see both sides of it. But there is no doubt that we need to stop wastage and we need to be investing. I think we need to invest some public funds to produce efficiencies, and we should be encouraging private investment on that.

I have argued for a 3 per cent efficiency dividend for irrigators, that they should be investing to improve efficiency. I do not accept the argument that if they do invest they should get all the saved water so they can irrigate a bit more. I think we should be looking at an efficiency dividend, in the way you make government departments produce efficiency dividends.

Benchmarking is an idea that I think is an interesting one for us to look at. In the urban water industry we have a document that comes out every couple of years called *WSAA*

Facts, where the major urban water suppliers benchmark themselves against each other. They hate it, because it shows where the weak performers are. But it is a bloody good strategy for seeing where the weak performances are, and we should be putting pressure on people. So I would like us to start benchmarking the irrigation and water supply systems, so that we can identify where are the really weak irrigation suppliers who are causing environmental impacts, who are encouraging uneconomic water use, and put pressure on them, invest in them, or close them. So, it is just taking that model from the urban industry, which I think has had some really beneficial impacts, to translate it across into the irrigation area.

The next matter I will refer to is regulatory reform. The Australian water industry at the moment seems to me to have four quite disconnected regulatory systems. We have regulators looking at service provisions, we have regulators looking at human health, we have regulators looking at the environment and we have regulators looking at pricing aspects, and as far as I can see they never talk to each other and are totally disconnected. I think we need to think very clearly about our regulatory framework. It seems to me that if we set the right regulatory framework we can encourage a whole lot of innovation. We do need to get away from the system where we let the water industry set its own standards.

The water industry is driven by engineers who like building things. They would like nothing better than to jack up the standard so they can build a fancier water treatment plant or whatever. We need to somehow have some scrutiny over that so that it is not led by engineering can-do but is led by community need. It is very hard to get to that. But if we had an efficient economic regulator he would be making those service providers, human health and environment regulators, justify the costs they are imposing on society. So the economic regulator can help determine what standards we want.

I think it is important that we have a regulatory system that does not say how to do everything but says what has to be achieved, because you do want to encourage innovation and better ways of doing things. I think the regulatory framework is one of the weakest parts of our water industry at the moment and really warrants some attention. We want the regulations to be cost effective, not letting people put goldplate on the taps, which they will do if given half a chance. I think there are some real free kicks to be had there with regulatory reform if only we could tweak that and get it working better.

My next point concerns knowledge. I have to declare my self-interest here as a researcher and someone who has just been leading a research group. But it is clear that the knowledge that underpins many of the decisions that society has got to make about water are not just available to the various interests that we have. Most of the stakeholders in the water industry want to protect river health, but we have not, until quite recently, had tools for measuring it. We have now got those. They are still crude, and they are going to get better, but we have got some.

Given the strong economic interests, all of the knowledge we put on the table is going to be contested, sometimes in courts. I am involved with the Cubbie Station at the

moment. That is being fiercely contested, the knowledge. It will probably end up in courts. So, science has always been contestable. Scientists normally contest each other's knowledge, so we are not concerned about that. It is just that we are going to have to have strong and rigorous knowledge if it is to survive that scrutiny. We know that with the Australian rainfall and soils we cannot transfer a lot of the knowledge we need from other jurisdictions. We do not have a tradition of knowledge-based decisions. Everyone knows what should be done. Just spend money. But we are not really focusing on getting the knowledge to spend that money wisely, and when you look at the last hundred years a lot of it has not been very wise. I fear that we are continuing to spend on a knee-jerk reaction without necessarily having the knowledge.

The disaggregated nature of the water industry means that most of those individual organisations are not able to fund and commission research. They are not even smart purchasers of research. They do not know what has already been researched. So when I look at some of the research they commission, it has already been done, it is in the literature, they just do not know that it has been done. So we really do need to get more intelligent purchasers of research, a more strategic view of what research we need. The community model we are using with catchment groups is even worse. There are some really exciting things happening in those catchment groups, but not many of them are really looking very closely at the research base. When I talk to them about it, they say, 'Well, yes, there might be stuff there, but we are far too busy getting these things organised.' So even the knowledge that is on the table is not getting through to those catchment groups.

Research organisations like CSIRO, the universities and CRCs are all now expected to get substantial industry funds, and they are all quite good at doing that. The driver of that means they start taking on generally quite short-term research. We are not doing the long-term research investments I think we need. We do not have a secure research funding model, and I think we need it. I am not sure which way to do it. One idea is a levy on National Competition Council payments for water reform to the states. One is a charge on all water sales or trades or, of course, payments from consolidated revenue. I am not going to go down the path of levies, after last night. There are a number of ways we can generate revenue, and you know more about those and the political costs and benefits than I do. What I am saying is that if we want a decent knowledge base we need to be investing in it with long-haul, patient investment.

We also need to get some more strategic thinking into our research investment. The current system is not giving us a strategic knowledge base. It is letting ill-informed purchasers buy things that they think they need, without really looking at what are the longer term knowledge needs. I would like to see a three person task force review how we are spending water research money at the moment and then to look at the gaps, and there are some significant gaps. My gap is the time, so I am going to have accelerate here.

My last point concerns managing environmental water. Governments are appreciating the impacts of over-allocation. They are attempting to get water back for the environment. How are we going to manage that environmental water? Don Blakemore says we should have an environmental manager in the Murray Darling Basin Commission, and he has put one in, and it will be interesting to see whether that model works.

But this environmental water needs to have a share of the storage capacity and we need an intelligent manager to release it at times that will give us agreed environmental outcomes. Most of the existing water agencies do not have that expertise orientation, and if you gave them that environmental water one wonders whether it would be used wisely for the environment or not; i.e. would they build the intelligence to know when to release it?

So, I have been playing around with the idea of a national rivers corporation. It seems to me that, if we are expecting federal funding to buy water back for the environment—buying it on the open market is one of the clear strategies and that is allowable under the national action plan and probably under NHT funding—who is to own and manage that water? Would you give it to the irrigation supply companies and say, 'We'll trust you' or, if it is to be publicly funded, would you invest in a national rivers corporation?

What is attractive to me about a corporation is that you have the corporations law and you have directors who can go to gaol unless they act in the interests of the corporation. I would like to see a corporation focused on delivering environmental outcomes with directors clearly focused on doing that rather than directors made up of state interests as is the current Murray Darling Basin Commission. Such a corporation would have to develop the expertise to know how to release. That is an interesting model. It is hardly a surprise that that model does not have the support of the states, but it might be a much more efficient vehicle for federal investment in water allocations than we have at the moment. That was a bit aggressive, wasn't it?

To wrap up, water is the key to economic development, it is the key to living in this country, and it is a critical driver for a whole variety of ecosystems that make Australia a global hot-spot for biodiversity. So, it is important, and it is important that you get it right and give us some leadership. Australians have always been troubled as to how best to use the resources of the Murray Darling Basin and elsewhere.

Another diversion! We are talking about developing the northern rivers. Look at what we have done in the Murray Darling Basin. If you are going to develop any northern rivers, you need at least a 10 year knowledge strategy to at least start to measure the flow. We are going to be making decisions based on a good drought or a Dick Pratt or someone like that, and we have absolutely zero knowledge about those systems. If there is one thing that we should be doing for both development and conservation it is putting in place a 10 year program across northern Australia to understand those rivers.

Over the last 100 years we have made a whole lot of choices. In every one of those choices all of the protagonists claimed that their particular outcome was for the public good. The public have not been treated too well when you look at 100 years of outcomes. Every state is seeking access to water to allow for development, to create wealth for the community, and to try to maintain its aquatic systems. We are trying to protect river health. Getting a balance between all of those things is why we have politicians—so, I wish you well. Scientists are there

just to tell you what you have achieved and what the trade-offs are. I have to say that I do not think the present institutional arrangements are working, and I do not think they are getting the outcomes that any of the interests want, and I think they are having very high transaction costs. In fact, we are in gridlock over much of it; we do not seem to be able to go forward.

We need processes that let us make decisions based on the best available information, and we need to make those decisions stick for a reasonable time so that people can invest and make them work. I think the COAG water reforms have been a good start. When you look at what we have achieved since 1994, they have been an excellent start. They have made the water industry more economic and they have made it more environmentally sustainable, but I think the jury is still out on that.

It is clear to me that we are not achieving what society wants. The reforms that we put in place in 1994, such as the environmental flows, the water allocations and the research, have not been fully done. There are new things emerging that we need to address. Today, I tried to give you a quick shopping list of some of the ideas that I think should be on our political radar as we look at how to go forward for the next 100 years. Thank you.

MR TONY McRAE (Western Australia): As far as I know, we are not affected by the Murray Darling other than being involved in a national debate on it. There seems to be an internal contradiction, or maybe it is part of your still developing thinking about how to approach this. Your resort to a national institutional response is, I think, flawed, demonstrated as it is by the most successful example that you can produce, the Cooper catchment. So, from a Western Australian perspective—and my perspective—I plead with you to think more about what are the ingredients that drove success from catchment and community upwards rather than resorting to a national institutional model of change, because from our perspective one size does not fit all and there is grave danger in just relying on the feds to come in and produce a national system that does not actually apply anywhere in reality.

The second point I make relates to research. Again, it is a plea for you to develop your thinking—because I think you are going in the right direction—in and around the long research lead times that are necessary if you seriously want to make a change and a bit of a difference. It does have to be knowledge-based, and I think that is the role of the federal government. I think that is where they have clear leverage and capacity. It is not at the delivery end, and I do not think it is at behavioural change levels that we can rely on the national government.

DR PETER CULLEN: Thank you for that. I have worked with the Cooper Creek and the Georgina Diamantina for the last 10 years. The biggest single driver was fear of governments. They thought that they had to take control of it themselves—and they have been quite successful so far. Thank you for your comments, I will think about those.

MR BRUCE BILLSON (Commonwealth): If we do not pick up ideas such as a national catchment authority or a water corporation or something like that, is there not an

argument that the cash should stop flowing until such time as those jurisdictions seeking to retain that responsibility have a tool kit in place with the framework, the decision support systems and the wherewithal to actually implement the actions that are required, and then release the financial flows when we have the capacity to make sure those resources are being used as wisely as we hope the water is being used wisely?

DR PETER CULLEN: I had the privilege of addressing the federal government before the national action plan was developed. As you have probably gathered, I feel quite passionate about these water issues. I was confronted by the Treasurer saying, 'Why is this a national problem? The states have caused this problem. The states now have a growth tax, why won't they get on and fix it?' That was a pretty persuasive argument. I had to work very hard to convince the government that the national action plan was sensible for governments—and there are a whole of reasons for that—but there was a strong view in the cabinet, I think, that enough is enough. They have been pouring money down these black holes and nothing has been happening. I do not think it will be anything like as easy for the next person trying to sell a national action plan to the federal government. I do not say it was easy in my case. There are cynical views afoot that we are not getting a bang for the buck. When I look at what has happened since the national action plan, I have a bit of sympathy for some of those views.

MR TONY WINDSOR (Commonwealth): One of the things that seems to come across to me is that, particularly in the parts of the system where there has not only been an allocation but an overuse, there is real individual suffering and economic pain. Given your knowledge of the COAG arrangements and the national action plan—one of the things that was supposed to happen there was a definition of property rights—what do you see as the best mechanism to claw back some of that water, whether it be for the environment or to bring some of the systems back to a sustainable level? What mechanism would you use if you were God?

DR PETER CULLEN: Thanks, but I am not. First, sorting out the real property rights from the asserted property rights is fundamental to going forward. Where there is a real property right, I agree there must be compensation, or we buy the water on the open market. That is where I think we get a better bang for \$1.4 billion of federal funds than we are getting with a lot of our current activities. So, I argue that we should get in and use some of that money to get the water back, and over 10 years you would get quite a lot of water back. In other areas I have said that I think the users of water also have some responsibility. Governments did not dish out these licences like confetti, they did so under pressure from people. I like the idea of an efficiency dividend. Over a 10 year period you could expect a farmer to achieve a 3 per cent efficiency dividend every year just by improving his practices and in a whole lot of other ways.

I do not assume that that water should then go back to allow a few more acres to be irrigated. That should be going back to the rivers. So, there are a variety of structures. However, you cannot move until you get the property rights out. Mike Young and Jim McColl's paper gives us a very nice framework to go forward on that. We need to now work out the steps to operationalise those very interesting ideas on property rights.

HON. MIKE ELLIOTT (South Australia): Thank you very much. As appreciation of what you have done for us today, I offer you two South Australian wines.

[Morning tea]

**PANEL:
'PUBLIC PRIVATE PARTNERSHIPS—PROVISION OF INFRASTRUCTURE AND ENVIRONMENTAL NEEDS'**

HON. MIKE ELLIOTT (South Australia): I will ask the speakers to give a 10 minute presentation. Hopefully the 10 minutes will be 10 minutes, so we get a question time at the end of it. The first speaker today is Karlene Maywald. She is a member of the South Australian House of Assembly and is now in her second term as the member for Chaffey, being first elected in October 1997. She is also the leader of the National Party in South Australia. For those who do not know South Australia, the seat of Chaffey covers most of the irrigation districts along the River Murray from the border as far as Morgan. Karlene was a member of the Murray River Select Committee, and she sits on the parliamentary Economic and Finance Committee. She was also a member of the Environment, Resources and Development Committee up until the last election.

MRS KARLENE MAYWALD (South Australia): Thank you for the invitation from the Public Works and Environment Committee Conference organising group to speak to this very important topic. I have decided to talk about some very successful public-private partnerships (PPPs) that have been developed in the Riverland, in particular, a couple of projects such as the Qualco Sunlands drainage scheme and the benefits that we are achieving through the partnerships that Environment Australia have built with the Australian Landscape Trust with the Bookmark reserve and the Calperum Station projects. Firstly, the Qualco Sunlands area is an area of my electorate where we have 25 water allocations or licences, and one of those licences is a trust of 80 growers. So, 100 growers are involved in that district.

It is a district that was established under irrigation after the 1956 flood and, in hindsight, if we were able to choose whether to do it again, we would never have irrigated in that area. One of the problems that we had was the soil structure and the fact that there was a level of Blanchetown clay that creates a perched water table sitting underneath the irrigation area from the water that passes through the profile. It has resulted in waterlogging of a certain areas, and a small percentage of growers were having difficulty maintaining their productivity.

The area was looked at as a whole, and the irrigators were engaged early on in the piece to work out how we could find a long-term solution to this issue. We did an enormous amount of work on where the impacts were affecting that region. We did a cost benefit analysis, we did an analysis of who actually benefits from any work done there and how broad we should throw the net. We ended up drawing a ring much wider than the area that was just affected. That brought in a whole heap of irrigators—who we called our peripheral irrigators—who were not affected at all by the irrigation drainage from the area. It created a conflict in the community very early against those who were impacted and those who were not, and how we

brought them all into the equation given that some were having an impact on other areas but it was not affecting their property. It took us seven years to deliver this public private partnership. In the end last year we commenced pumping on a \$7.2 million drainage scheme.

We have learned some significant lessons from that project. We have learned that engaging community members is incredibly important. However, putting them in charge of something without giving them the skills to deliver on it can be very counterproductive to a positive outcome. We had a bunch of irrigators sitting on a drainage district board who were overseeing the management of a \$7.2 million engineering project. They appointed a project officer and there was significant conflict between the government departments and the way they wanted to run it and the way that the board felt it should be run.

We have learned the lesson that tokenism in public consultation from the bureaucrats certainly does not help in building the relationships. We have learnt that, in a lot of instances, whilst the bureaucrats might be saying one thing, they are working to deliver another. In the end that does not work. The Qualco Sunlands drainage scheme is working now. The community has now taken over the management of the scheme for a 30 year period. We have a partnership where government put the \$7.2 million upfront, and the community irrigators are paying an annual operation and maintenance fee for a 30 year period, and over that 30 year period it will mean that the community has contributed 45 per cent to the scheme and the government 55 per cent to the scheme. That is funding that has come from both the Murray-Darling Basin and the state government for the government's contribution, and the Murray River Water Catchment Board. So, there is a significant partnership there.

One of things I found was a real problem in this project was that there was a top down command and control culture within the department, and the tokenism given to the consultation led to much angst within the community. When you do not have the community coming alongside and working towards the outcome, you end up having long and lengthy delays, with litigation and a situation where you do not achieve a good investment of money in an acceptable time frame. That could be managed far better, if we were to give those people the opportunity to have access to the skills they needed that provided them with independent analysis of what was being done to give them the confidence to go forward. As one of the irrigators on the board said to me, 'They've put a bunch of dumb potato growers in to manage a \$7.2 million project.'

We are looking at delivering a number of other projects in the Riverland in the near future over the next couple of years. A couple of those will involve drainage and salt interception schemes which will require significant investment both by the government and the community. One of those is at Book Purnong, at lock 4 near Loxton, where a salt interception scheme will be built. The community has taken a totally different approach. It has learned from the circumstances in the Qualco Sunlands area that they are much more able to be masters of their own destiny by taking a proactive role up front and directing where the project is going.

The Book Purnong group has proven to be extremely innovative in the way in which it is approaching the matter, and I am looking forward to seeing the results of that project.

Another area where a PPP has worked extremely well is with the Australian Landscape Trust's investment with Environment Australia. About 10 years ago, the Chicago Zoological Society and the McCormack Deering Foundation decided that they wanted to invest some money in a South Australian landscape. Calperum station and Taylorville station became available and they invested on a dollar for dollar basis with the federal government and purchased a significant portion of land, which includes two station areas just north of the river at Renmark and a substantial area of wetlands as part of the Murray Darling Basin system. In that 10-year period the Australian Landscape Trust has been able to attract \$18 million in direct investment in partnership with governments, with private enterprise and with philanthropic foundations, and have built an incredible outfit up at Calperum.

What happens up in Calperum is that the community is actively involved in adopting paddocks and managing wetlands, and they have a long-term commitment to a better outcome. These are people who are off irrigation farms, people who are out of the townships, people who make their living out of irrigation, who are willingly putting things back. In the past 12 months we had 14 000 volunteer hours out at Calperum and Taylorville stations, which is a significant investment of time. Most of the permanent volunteers have entered into management contracts with the Australian Landscape Trust, which is the managing authority on behalf of Environment Australia, and they are working very effectively together to ensure that we get some really good environmental outcomes. You only need to travel to the wetlands up there to have a look at the work they are doing to see that they are making a significant difference.

I believe that PPPs offer an opportunity for states to address our infrastructure deficiencies. In the Riverland of South Australia there needs to be significant investment in drainage schemes and salt interception schemes, as well as a significant investment in irrigation improvement. Currently, we are expecting that our irrigators will meet 85 per cent efficiency by the year 2005 (the majority already achieve that, although there is certainly a way to go with a small minority of irrigators up there), then by 2010 our requirement on all our irrigators is to mitigate for the off-site impacts of the other 15 per cent of water that passes through the soil profile. That is an enormous impost on irrigators but something that has to be done.

We also have to be mindful that, to achieve that, irrigators have to be successful, and to be successful we cannot continue to be putting cost imposts on them over and over again. They have to be able to afford to invest in environmental sustainability. If we take away their ability to invest in environmental sustainability and introduce blunt instruments that take away what they perceive as their property rights, we actually defeat the purpose, we get enormous community conflict and we do not have a way forward. One of the things that was mentioned during Peter Cullen's presentation, a question by Tony Windsor, I think, was the question of

property rights. I believe that property rights is the next biggest issue that we are going to have to deal with and get dealt with before we can move to the next stage.

We have seen an enormous cultural change in community. Members of the community are prepared to embrace public private partnerships to invest in future developments within their own region. They see the need for change but they do not want to be short-changed. When we are talking about reducing water, we are actually talking about the amount of water that has to come down the stream, shutting down entire communities. When we say what the real property rights are and what the reimbursement is, the reimbursement to the individual grower is not going to compensate for the impacts on the entire community. That is something we have to be very cognisant of when we are dealing with moving forward. We need to be in that partnership with the communities.

The public private partnerships do not just go to investment into infrastructure but go much broader than that. It has to be investment in the future sustainability of those communities as well. Unless we do it fairly and equitably, we are not going to be able move forward at the pace that we need to make the change within time to save our system. I do not believe that PPPs should be used by governments to reduce government investment. One of the fears that the community has is that if we get involved with this and we are investing in things, the government pulls back, and the government tends to reduce its overall commitment. The concern of communities is that you can get a commitment out of this government but it is not binding on the next. Anything that seems to be on the face of it a good thing at this time, what will it be when the next government takes effect?

What we have to do is make sure that we can provide confidence in arranging contractual arrangements with community and with the private investment within community levels, and that we actually give them security. Landscape restoration is beyond the affordability of government, therefore partnerships with the private sector must be entered into. One of the difficulties with an environmental restoration program is that it is hard to quantify the benefits for everyone, and who actually is the beneficiary? I think you heard from Graham Dooley on Monday, from Riverland Water, that that is a highly successful project that actually delivers water at the end of the day at an acceptable standard to the community. It was a very successful partnership that the government entered into to deliver that.

When you are actually talking about infrastructure that will benefit the environment, understanding where those balances are between the benefits to the public good and to the irrigators, it can get very tricky. Irrigators are often fearful that they will cop the brunt of the cost when, in fact, the benefit will be broadly felt throughout the whole state community. One example of that is a potential to increase and put the impost on irrigators when the irrigator is generally a price taker not a price maker, yet the industry flow-throughs that benefit from the produce of those irrigators are not necessarily under the same pressures to improve the system.

In the wine industry, for example, the grower has no influence over the price: he has to take what is offered in the contracts. The winery has the opportunity to make its benefit, yet the irrigator is the one who is having the pressure put on him to improve the practices to supply the winery, and we do not have the flow-through cost-sharing right across the state. I see that as an issue that we have to deal with and have to be cognisant of; that we just cannot expect that the first person who actually has access to that water is the only person who benefits from it. The whole community and the state economy as a whole do benefit, there is a significant role for governments to play, and the broader community must be part of sharing the costs associated with the rehabilitation that is required.

One of the other problems we have is the conflicts between agencies and communities. We have actually seen a significant change in attitude in the community but we still have some cultural problems in the departments, and there tends to be a silo mentality approach towards management. I am hoping it is changing with the embracing of PPPs by the previous government and this one and that we will see a breaking down of the silo mentality of governments in managing PPPs. Thank you.

HON. MIKE ELLIOTT (South Australia): Thank you Karlene. The next speaker is Steven Page, who has over 20 years experience in finance in both the public and private sectors, including fixed interest portfolio management, IT systems development and government/corporate treasury operations, specialising in risk management and financial options technology. Steven has been the Director of the Public Private Partnerships Unit in the South Australian Department of Treasury and Finance since March 2001, having developed South Australian Treasury's PPP policy while employed by the South Australian Financing Agency.

Before joining the South Australian Treasury in 1997, Steven worked as a portfolio manager with Westpac Investment Management and was Treasurer of the Tasmanian Public Finance Corporation from 1990 until 1994. Steven has a law degree from the University of Stellenbosch, Capetown, and an MBA from the University of New England.

MR STEVEN PAGE: Good morning. I will be mindful of my 10 minutes. I thought today I would run through PPPs (public-private partnerships) in a more generic sense to put into context the basic principles that apply to a PPP. There is a lot of misconception abroad on what can and cannot be achieved with PPPs. I will need to skim over a few slides in view of the time.

I thought I would start out with a general definition. The key elements of PPPs are in the definition. The important point probably is that PPPs are about achieving service outcomes, not necessarily simply about building infrastructure per se. One of the broad misconceptions is that it is often confused with privatisation, which I will run through in the next few slides.

As I said, we have a concentration on service outcomes, that is, what are we procuring from this infrastructure, rather than the infrastructure per se. It is important to recognise that it is a procurement option. There is nothing novel about it. It is a different method of procurement but, nevertheless, an option. It suits some projects, but not all public sector projects. Thirdly, and most importantly, we do not have any magic pudding here. At the end of the day, the outputs must be paid for and whether they are paid for by the budget or users, for instance on a toll road regime, they have to be affordable to the community.

Putting the options in perspective, there is a vast difference between PPP and privatisation. We have conventional procurement where the government retains a lot of control, and of course all the risk associated with the infrastructure. The other extreme is that we have privatisation where the government divests itself entirely of the infrastructure and the services. Then we have a range of arrangements between that, which can be outsourcing of services to the private sector or the traditional build-own-operate and transfer model which is how a lot of the water projects are delivered.

Public-private partnerships sit in the middle where there is a sharing of risk and a sharing of control of the asset between the government and the private sector. The single reason we go to private financing of infrastructure is to achieve value for money. Private capital is generally more expensive than public capital. We want to see some value for paying the premiums in private sector financing costs.

We achieve this through an efficient allocation of risk between the public and private sectors. It is a partnering arrangement. We are not looking at trying to divest ourselves of all risk. The key principle is that we allocate risk on the basis of which party to the contract is best capable of managing that risk. Unlike a lot of prior projects that were privately financed, where we had a lot of excessive risk transfer and often project failure, we retain the risks in the public sector we know we can manage better than the private sector as a matter of principle.

The key driver is that we need private sector capital in the deal, what people refer to as the 'skin in the deal', because the objective is that we want to motivate the private sector to deliver its outcomes on the basis of its capital at risk through the payment mechanism. If you do not have capital at risk in the project, for instance, if you are in a typical outsourcing arrangement, you are relying on contractual sanctions to get performance. Under PPP, if the services are not delivered, the private supplier does not get paid. It is clear cut, simple and well specified in the contract. In essence, we are relying on the hip pocket motivator to achieve outcomes.

When we are talking about risk transfer, in many projects where there has been too little transfer there has been no value for money in it. It has ended up being a form of rent-seeking where the private sector is getting paid a return for delivering very little and managing very little risk. At the other end of the spectrum, where there has been too much risk

or excessive or unmanageable risk transferred to the private sector, we have had project failure. We have endeavoured to look for the happy middle ground by carefully negotiating and sharing our risks between the public and private sectors to achieve that value for money outcome.

In relation to our policy framework, that slide shows how the management structure works at the moment. All states have issued specific guidance material on how to conduct a PPP procurement. We have worked with other state treasuries to get consistency and uniformity in the guidelines. I think everyone would agree that it would be to the benefit of all governments if we had a national market for infrastructure, rather than a strictly state-based market in operation.

The guidelines capture the essential principles about which I spoke earlier in that we are looking for service outcomes. So, to develop a good PPP, you have to have operational content in the deal. It cannot simply be asset financing using private sector capital. As I said before, it is expensive to raise. We need operational content in terms of service outcomes.

The second key point is that we need to identify some risks; some risks the private sector will manage in return for the premium on private sector finance. As a state, simply accessing private finance to build assets does not make sense. The government can raise funds more cheaply. Finally, prior transactions that have worked are a good indicator they may work in the future.

This slide covers our process in terms of the internal processes that the public sector must go through to develop a business case for cabinet, to test whether a PPP procurement is feasible. In some cases the business case will actually come to the conclusion that it is not feasible. We do not decide to do something as a public-private partnership right at the beginning, and get ourselves forced into this procurement model through pressure from various sectors. We look at the project from a potential point of view, and then objectively try to develop the case that there will be value for money in contracting with the private sector in terms of a particular project. It is very much a project by project basis.

To summarise, if we are looking for value for money, we need a consistency of process. We need to specify what we will buy out of the partnerships arrangement. It may sound obvious but sometimes the public sector is quite circumspect in deciding what it will buy at the end of the day. It will tend to focus more on the infrastructure rather than what is coming out of the infrastructure.

As I said earlier, we need to motivate behaviour to deliver outcomes. We need clear payment mechanisms and a strong abatement if performance is not up to standard and that has to be clear cut. Very importantly, the public sector must be discouraged from being very prescriptive as to how the asset will be designed and constructed. The private sector will carry

the risk of the asset. A lot of latitude needs to be applied to work out how it can best deliver services with its capital at risk and, of course, allowing that that leeway also encourages some innovation depending on the type of deal. These are long-term contractual arrangements. As with most of them, complex contracts tend to go to the bottom drawer after a while, so the quality of the partnership arrangements and with whom the government is dealing—in terms of integrity and goodwill—is essential, and probably one of the key drivers of value for money.

I have displayed a brief listing of the projects we are looking at presently and water is definitely on the agenda as a proven method of delivering water infrastructure. That concludes my presentation, thank you.

HON. MIKE ELLIOTT (South Australia): Our next speaker is Mike Terlet, Economic Development Director, United Water International. Mike was responsible for the formation and growth of the largest private sector defence and aerospace company in Australia from 1978 to 1992. He retired in 1992 as Managing Director and has undertaken a number of directorships in both public and private companies since that time. He brings a wealth of experience as a director and chairman and extensive knowledge in international trading and investment. He was made an Officer of the General Order of Australia for his contribution to industry and export in 1991.

He recently completed a two-year term as President of the South Australian Employers Chamber of Commerce and Industry and is currently an Executive Director and Deputy Chairman of United Water International Pty Ltd, Australia's largest private sector water company. He currently holds an extensive number of positions, some of which I have already mentioned. He holds the following positions: Chairman, International Wine Investment Fund; Director and Chairman, Tidswell Administration Pty Ltd; Director, Louminco Pty Ltd; Chairman, Business Vision 2010; Chairman, National Institute of Labour Studies (NILS); Member, Engineering Employers Association Committee of Management; board member, Business SA; board member, Water Industry Alliance; member, Australian Industry Group National Executive; and South Australian President, Committee for the Economic Development of Australia (CEDA).

I reckon he has only 10 minutes to spare, looking at that list. I have been told that we can let him have 15 minutes because we did make up time with the photographs and determination has already been made about the location of the next conference. Mike, if you have been told 15 minutes, you can have it.

MR MIKE TERLET: Delegates to the conference will be well aware of the different ways that public/private partnerships can be structured. You will also be aware that the choice of model is dependent on the objective being pursued by the government/public sector. In the context of the water and environmental industries, the difference between whether we are primarily concerned with the provision of infrastructure or with the delivery of

water and environmental services will be a key question in deciding which model of PPP is most appropriate. I would now like to give a description of the Adelaide outsourcing contract, the particular circumstances which led to the model being adopted and the lessons to be learned for the provision of infrastructure and the delivery of water and environmental services.

The Adelaide contract model has proven to be ideally suited to situations where the assets already exist and the asset owners are seeking to realise significant efficiency gains, performance improvements and risk transfer while retaining ownership and investment control. By way of background, in the early 1990s the Australian federal government commissioned a number of initiatives to increase the efficiency of the Australian water industry. In line with the outcomes of these initiatives, the South Australian government corporatised the state water authority (EWS) on 1 July 1995 to form the South Australian Water Corporation (SA Water).

Following this, a framework was developed to outsource certain functions of SA Water. With the focus on the management, operation and maintenance of the water and waste water treatment plants and reticulation systems, the following policy was set out: the South Australian government would retain ownership of the assets; the South Australian government would continue to set prices for services; SA Water would continue to provide services in rural areas; SA Water would retain responsibility for bulk water supply; SA Water would continue to fund and nominate the capital investment program; and SA Water would retain all customer billing services.

The government sought proposals from large international specialist water companies that had a proven track record in the provision of outsourcing contracts, access to the world's best practice necessary to provide initial and ongoing efficiency gains, proven asset management skills and the financial security and stability to deliver contracted services and assume the assigned risks. In order to bring about the outsourcing contract, four international water companies were invited to submit proposals. Two of these companies, Vivendi Water and Thames Water, subsequently formed a joint venture with a local engineering consultancy firm KBR (formerly Kinhill) to form United Water International Pty Ltd.

This joint venture was awarded the contract. Vivendi Water is the largest water company in the world. It employs approximately 90 000 employees, it operates in 100 countries and it serves approximately 110 million people. Its turnover for 2001 was somewhere around Euro14 billion. Thames Water is the third largest water company in the world, serving some 55 million people with an annual turnover approaching some Euro2.6 billion. Both these companies operate across the spectrum of PPP models in different parts of the world. The Adelaide contract covered an area to be served of some 1 446 square kilometres.

The population served for water and waste water were approximately the same—about 1 053 000 people. There were 440 000 water connections and about 400 000 waste water connections. The mains water total length was about 9 000 kilometres. The length of the sewers

was about 7 000 kilometres and there were six water treatment plants with a combined daily capacity of 1 800 megalitres. There were four waste water treatment plants with a combined capacity of about 270 megalitres a day. Under its contract, United Water is responsible for the management, operations and maintenance of the water and waste water treatment plants and networks, a 24 hour emergency customer call centre and asset management and capital works delivery.

An important component of the success of the Adelaide contract was the transfer of staff from SA Water to United Water. That transfer of over 300 employees was achieved in a very short time frame with absolutely no industrial relations problems. Worker entitlements were either paid out or protected under the terms of the contract. On 1 January 1996, United Water commenced its 15.5 year partnership with the South Australian government, with the challenge of providing 20 per cent savings in costs whilst meeting ever-increasing service standards. I might add that, on that particular night, there was a massive storm in Adelaide with massive power failures all over the place. That was the introduction United Water had to its management and maintenance task.

Over the 6½ year period, this partnership has realised savings of at least \$10 million per annum, while service standards, such as water quality, environmental discharges, response times to burst water mains and sewer chokes have all significantly improved. So much for the background history and objectives, but what about the performance?

The major feature of the Adelaide contract has been its ability to provide not only a step change in performance but also continuous improvement. The contract is outcome focused with operational performance being the key criterion upon which success is based. This is particularly significant in an environment when the level of public scrutiny of infrastructure services is growing and the demands for improved performance are ever increasing.

The contract contains extensive, defined performance standards which United Water has to deliver. There are 161 key performance indicators (KPI) ranging from water quality parameters to response times for attending burst water mains, all of which must be complied with 24 hours a day, 365 days of the year. Financial penalties apply for failure to meet any of these performance standards.

There are strict reporting requirements that require performance against these criteria to be reported to SA Water on a continuous basis. United Water has successfully delivered these performance targets with greater than 99 per cent compliance. For the 12 months to 30 June 2002, 66 per cent of the performance measures achieved above target levels, with 33 per cent meeting target levels.

The contract requires that the services be provided under a certified quality assurance and environmental management systems. United Water's Adelaide operations are

third party certified to ISO9001 and have the environmental certification to ISO14001 for all of the wastewater treatment plants. SA Water now receives the benefits and the security that this certification provides.

In terms of real benefits to the customer, there have been significant improvements in water quality at the customer tap and in customer service standards. In addition, pollution loads to the environment from wastewater treatment plant discharges have been substantially reduced.

To effectively manage the performance of the contractor, SA Water has had to withdraw from the day-to-day management of the assets that it owns. This change in role is not an easy process and requires a cultural change on behalf of the public sector entity involved. It also emphasises one of the key factors in the success of an outsourcing contract of this type; the presence of an effective regulatory system which can oversee the performance of the contractor.

I would now like to address, asset management, capital works, pricing and cost savings. The provisions relating to asset management are a key feature of the Adelaide contract. The contract has been developed to provide a balance between maintenance expenditure and capital expenditure. United Water is required to produce detailed asset management plans for the assets. These plans detail capital expenditure requirements with a one year, a five year, and a 25 year outlook. SA Water then considers these plans in developing its own capital works program.

In a more typical operations and maintenance contract the contractor is not responsible for asset management. This can provide a significant driver for preventive maintenance expenditure to be deferred, leading to reduced asset life and premature asset replacement. For the Adelaide contract making the contractor responsible for development of the asset management plans and thereby creating a longer-term view of asset management has mitigated this. This eliminates the potential short-term benefits of deferring maintenance. This asset management regime does create some conflict between decisions on asset maintenance and asset replacement. However, it is a healthy environment in which to deliver more efficient 'whole of life cycle cost' asset management planning.

United Water is responsible for managing the capital works program of SA Water. In this model, SA Water controls the allocation of capital and determines the level of capital investment and the priority of the different projects. The role of United Water is to project manage the specific projects approved in the budget. In total, United Water therefore manages the 'normal' capital spend of approximately \$22 million per annum. In addition, a joint venture involving United Water and its parent companies has also delivered the upgrade of the wastewater treatment plants, as part of an environmental improvement program. When this

program is complete in 2004, capital works to the value of \$220 million will have been successfully delivered.

The Environmental Improvement Program demonstrates the success of the private sector in delivering capital works projects on time and on budget. The program has realised significant cost savings to South Australia by using an appropriate model of risk allocation and building on the expertise of United Water's parent companies. The Adelaide contract has not been used to transfer any financing risk to the private sector. The key focus has been on the provision of services rather than the development of infrastructure, which is in contrast to many other countries around the world where PPPs have been developed.

It should be noted that where one of the prime objectives is the development of the assets it is important for the public sector to understand the concepts of rate of return and profitability. Private sector companies do not come with a pot of gold to invest in infrastructure assets but must work with their partners, the financial institutions, to develop effective financing packages. Unless PPPs can be seen to be commercially viable, with suitable protection for investors, finance will not be forthcoming.

With regard to pricing, the pricing of the outsourced services was set to provide a minimum 20 per cent savings over the historic SA Water costs. Further, productivity gains over the first six years of the contract have increased these savings. The total savings over the life of the contract are expected to be somewhere near \$190 million. The pricing structure also reflects the allocation of risk. Services that are clearly defined and could be priced with a degree of certainty are provided for a fixed price. Services for which the costs are largely variable or unpredictable are priced on a reimbursable basis. However, mechanisms are in place to provide an incentive to minimise the cost of these services. This involves the setting of targets and sharing of cost overruns/savings.

The delivery of capital works is priced on the basis of a competitive price for the service delivered. On certain projects this may include an incentive bonus based on sharing of cost savings generated by United Water. The fixed prices are subject to review and renegotiation every five years throughout the contract term. The first renegotiation was successfully completed last year, providing further cost savings to SA Water and committing United Water to additional service standards.

What are the lessons to be learned out of this? There are many positive lessons that can be learned from the Adelaide contract:

- The public authority must be clear in defining the outcomes required from any PPP. An appropriate model can then be determined to meet the outcomes. The private sector can use its expertise around the world to design a model to meet outcomes.
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- A long-term partnership between an asset owner and an appropriate service provider can deliver substantial cost savings while providing increases in service standards. The formulation of this partnership must recognise the ability of both parties, and risk profiles should be shaped by the ability of each party to manage that risk. Private sector companies will readily take on risks that they can effectively manage. However, they will charge a premium for assigned risk they have little or no control over. For the Adelaide contract, risks that both parties have little control over are effectively shared through the pricing mechanisms.
- To deliver real substantial cost saving the client must be willing to allow the contractor to effectively manage the provision of the service. The client must step back from the daily operations and rely upon the KPIs to determine whether the objectives and customer needs are being met. Ideally, the client needs to reorganise to become more of a 'smart client' regulating and monitoring, not managing. Only then will the maximum efficiencies and cost savings be realised. To do this, however, the contract must be with a company which has proven capability, extensive resources and sound financial status.
- Asset management should be an integral part of the infrastructure outsourcing contract. This will ensure the assets are effectively managed and there is an optimum balance between maintenance and capital costs.
- Efficiency gains, service standard improvements and effective appropriate risk transfer can be achieved without the transfer of assets from the public to private sector.

In conclusion, overall the Adelaide contract has been a great success for South Australia and for the water industry in the state. It has proven to be a model that has clearly met the key objectives set by the government some seven years ago. Thank you very much.

HON. MIKE ELLIOTT (South Australia): The final speaker for this particular session is Stephen Young. He is the Executive Chairman of Equity & Advisory Ltd, a South Australian based merchant bank and corporate advisory firm. Stephen's career began in 1973. He worked for Peat Marwick Mitchell for three years, leaving Peat Marwick Mitchell to set up a new specialist insolvency practice, Allert Heard & Co. Stephen was founding member of that firm, and in 1982 was admitted as a partner.

In 1989, Messrs Allert, Heard and Young sold their practice to the international chartered accounting firm Arthur Andersen. From 1989 until 1997 Stephen, in addition to being managing partner of the Arthur Andersen Adelaide practice, held a number of national and international roles. He was a member of the Australian Management Group, a member of the worldwide Insolvency Core Group, partner in charge of emerging practice lines for Australia, i.e. all service disciplines other than audit, tax and corporate recovery, and a member of the Worldwide Advisory Council for a two year term, commencing in 1991.

In 1997, Stephen established Equity & Advisory Ltd. Equity & Advisory offers advice in the areas of mergers and acquisitions, strategic advice, valuation and financial

analysis and turnaround consulting. Stephen has considerable experience in providing commercial advice in respect of transactions involving water infrastructure assets. Stephen led the Review Commission by the Brown government into South Australian Water. Whilst Stephen was managing partner of Arthur Andersen during the 1990s he provided advice to SA Water in relation to the United Water outsourcing contract.

His firm, Equity and Advisory Limited, is presently acting as the lead commercial adviser to SA Water in respect of the Victor Harbor waste water treatment project and reuse scheme. Stephen's firm is providing advice to the Australian Railtrack Corporation in respect of the lease of the New South Wales interstate and Hunter Valley networks. Stephen is a member of the South Australian Council of the Institute of Directors, a member and former chairman of the South Australian Chapter of the Young Presidents Organisation, chairman of AI Limited, a board member of the Australian Submarine Corporation, and a member of large private companies. Stephen has also been a member of a number of government committees including the Premier's Round Table.

MR STEPHEN YOUNG: I will begin by saying that I am here to give you a financier's view, but I have spent some time advising the poachers and the gamekeepers, and I find myself now recently appointed to the Australian Submarine Corporation board so I am now the game. So, I can speak to you with broad experience on all fronts of the public sector and the private sector involvement in the public sector. By way of background, the debate about whether or not the private sector should be involved in the public sector has been going on most probably for more than a century. Governments of one persuasion or another have either been seeking to nationalise or privatise for much of that time. However, over the last couple of decades—as a result of initiatives taken, first, in the United Kingdom by the Thatcher government, which have clearly been followed (whilst varied somewhat) by the Blair government—there is a significant and increasing trend towards private sector involvement in public sector provision of essential services.

Looking at our own state, going back to the early 1990s we had the outsourcing of Modbury Hospital and the awarding of a significant information technology processing contract to EDS. This chart indicates the growth of that over the last decade. You had the outsourcing of the provision of water to United Water, the establishment of a prison at Mount Gambier, in the late 1990s the awarding of 10 water treatment plants to Riverland Water, the privatisation of South Australian ports to the Adelaide Steamship Consortium, the awarding of the running of much of our urban bus transport to Serco, the privatisation of all of our power utilities, and the sale of our local airport.

As we go forward under the public/private partnership regime we are looking at the establishment of a waste water treatment plant at Victor Harbor, a couple of bridges at Port Adelaide that are being considered for public/private partnerships and, as I said earlier, the Australian Submarine Corporation is in the process of being privatised. There are a number of

transport initiatives (including the Glenelg tram) which have been considered for public/private partnership, a couple of police stations and some schools that are under consideration, and there is the expansion and redevelopment of some hospitals which are under consideration. In all, there has been a significant shift.

It is interesting to pick up on the current stakeholders' attitude, which I think is reflective of what has come out of New Labour with the Blair government, but we have seen it roll through the Carr government, the Bracks government, and, locally, the Rann government. First, there should be a true partnership between public and private sectors. That is a real challenge for both sides; it is not something that comes naturally. We need to look at risk in a different way. Rather than the government trying to get rid of all risk, it is looking to transfer risk in an optimal fashion seeking to retain the risk that it can manage best and to transfer to the private sector the risk that it can best manage.

The public sector is moving away from import specification, where historically it has been very prescriptive about what will be built and how it will be operated, to focusing on outputs (the essential services that are required) and making sure that they are seeking the delivery of those essential services rather than being specific about how they are delivered. They are looking at much longer term arrangements (20 to 30 years) in order to make sure that the assets can be run efficiently and be funded for the whole of their life.

They are seeking to use private sector funding not on philosophical terms but where it makes sense, and obviously where the capital can be deployed it saves the public sector having to deploy that capital. Interestingly enough, rather than looking to get these assets off balance sheet, which was the early Thatcher trend, they were actually no longer concerned about whether the asset remained on or off balance sheet, they were looking to extract value for money. Stephen has spoken a little bit about that and I will try to explain how value for money might be provided.

I tried graphically to deal with the trends over a period of time. For example, if you go back and pick up the United Water contract in South Australia, the government was involved, the government had risk, the government provided the infrastructure, and it has significant capital and risk retained. Likewise, however, the private sector has picked up significant risk, and it operates the asset. At the other end, a lot of the Thatcher initiatives were early privatisation. The assets were taken off the balance sheet. It was user pays, and the asset then was completely out of government hands and the government was not involved at all.

That thinking then evolved to the construction of facilities on a build-own-operate basis and sometimes a transfer. Once again that was off balance sheet until it was transferred back onto the balance sheet provided there was an external user pays regime for revenue. As we stand now, however, the government has moved even one step further to the point where it is prepared to consider using this technique of involving the private sector for what might

generally be called social assets, that is, those assets where there is not an explicit revenue stream or where the revenue stream is not great enough to justify the cost of the assets.

Stephen has already been through the project cycle, so I will skim over this very briefly, but there are established guidelines. Where a project is being considered, there is a need to liaise with the community and other stakeholders in order to make sure that it is something that is potentially applicable for a PPP. Then there is something called an outline business case. I will speak about that in a moment in terms of how that is built up. At that time, those of you who are involved in the public works committees will see details of what is proposed. Then expressions of interest are sought, a final business case is then established, cabinet approval is obtained to proceed to tender, bids are then received, and provided there is value for money at that point there are negotiations and contractual agreements prepared in draft. Approval is then obtained from cabinet to enter into those agreements, and the contract is then up and running and under way.

What is interesting about that process is, first, it is transparent; and, secondly, it is consistent. The private sector and the public sector understand how it will operate and know the rules in advance. It is subject to probity and, most importantly, it is competitive on two fronts: it is competitive within the private sector and it is also competitive against the public sector, that is, it is possible right up until the end for the public sector ultimately to be involved in the delivery of these essential services, because that is what makes best business sense.

I will talk very briefly about how value for money is extracted. I refer to the column headed 'outline business case'. What is built up is a suite of costs. Those costs are presented to you generally with their net present value, and the following elements go into it. First, there are the capitalised historical costs. Those are the things that the government department has done in order to assess whether or not this project makes sense. They may have done engineering studies or other research or market testing. The raw PSC (public sector comparata) is made up of the capital cost of building the infrastructure and the operating costs over the life of the project.

Added to that is competitive neutrality, things such as payroll tax which the public sector would not ordinarily incur, but ultimately there is a revenue stream that goes to government either way. Then there is transferable risk, which is risk that might be able to be transferred to the private sector. Then there are retained risks which cannot be transferred to the private sector. Then, finally, there are future costs that are going to be incurred no matter whether the public sector is involved in the provision of the services or the private sector. These are things that are involved such as regulation and review of the performance of the asset and the delivery team.

The public sector then prepares what is called the public sector comparator, and tenders are sought. I will then try to explain how value for money might be extracted. There is

an area shaded red. The public sector comparator, then adjusted for attained risks, is a number that is greater than what the private sector is prepared to bid, the difference is value for money. Where there is value for money, a PPP is likely to be pursued; where there is none, it will not be pursued.

I have tried to specify the sources of value for money on the right. They are:

- design innovation—the public sector may have said, 'If we were to do this, we would do in this particular way; the private sector might choose to do it differently;
- whole of life operating efficiency—it may well be that they choose to man an asset or maintain an asset with a different cost regime than the public sector and, secondly, they may value risk differently; for example, design or operating risk. They may be far more confident about their ability to manage those risks than the public sector; and, finally,
- value for money is also qualitative.

There is no doubt that there is an increasing trend for the public sector to deal with organisations that have a reputation for delivery on time and with a minimum amount of the fuss.

I have been asked to talk a little about the financier's view and to do that I need to talk a little about the typical structure. You have government and the government has a concession agreement with a private sector company in the middle, and that private sector company delivers essential services to the community. A number of other players are involved. There are the providers of equity, the private sector consortium—and the equity sources for that I will talk about in a little more detail in the next slide—in keeping with Stephen's comment that they are looking for skin in the game, so are the financiers. In a private sector consortium you would normally find an operator with experience and reputation for delivery of these essential services, and they would have equity in the private sector consortium. You would normally find a construction contractor, similarly, who has a reputation for building these facilities, and they would have equity in the private sector consortium. Then you would have a debt provider, and the debt provider is somewhat similar to the government in terms that they are also looking to make sure that those who are involved in the private sector consortium have an appropriate level of equity at risk.

In terms of funding sources, I will not go through them in any detail, but they are made of two components—debt and equity. When you are involved in negotiations, you hear people talking about the debt and equity side, and they are black and white when they get around the negotiating table. The banks provide senior debt—a bit like house mortgages—out of the capital markets of quite sophisticated debt instruments such as capital index bonds and floating note rates which are seen in projects with a capital value generally of greater than a couple of hundred million dollars. Private placement subordinated debt is another debt

instrument that you will see, and there is lease based finance, which I am sure most of you would be familiar with.

What is interesting about the debt is that, first, it is structured for the term of the contract and is one of the reasons why the contracts need to be long term. Because the cash flows behind the cash flows that will service the debt repayment are generally speaking government rated, it allows high gearing of 80 to 90 per cent. However, because of those levels of gearing, the debt financiers require quite onerous performance covenants in terms of debt servicing. However, the debt providers are risk adverse. They provide debt quite cheaply, at a quite small margin above what government can obtain debt. However, because they are risk averse, they wish to have rights to step in, and I will talk about that a little later.

On the equity side, there are four or five different sources of equity. The first is from the public, and occasionally you will hear a major public/private partnership being spoken about in terms of the equity being sought from the public post-formation. A number of infrastructure funds put a lot of equity into these sorts of projects. There is equity that comes from financial institutions. As I said previously, for any of these deals to get up, both the operators and the constructors need to have equity in the game. Interestingly enough, most large water corporations have a significant amount of equity in their own balance sheet—for example, United Water has billions of dollars—so they are quite significant levels of equity. When there are institutional investors they seek to have board representation, and they generally seek a risk rated rate of return; for example, 15 per cent as opposed to debt in the order of 6 per cent.

From a financier's perspective he is looking at half a dozen things: first, is the government committed to a PPP delivery of this essential service? Financiers are becoming increasingly intolerant of governments' making up their minds on the run. The costs associated with being involved in these projects are very significant. The chance of a consortium being awarded where there may be a field of four is obviously 25 per cent. The last thing in which the private sector and the financiers like being involved is a project that does not even start. They look to see whether the consortium they seek to fund is cohesive and committed for the duration of the project.

We want to make sure that all the relevant risks have been identified and, where possible, they have been mitigated, and where they have been retained, appropriate funding allowances have been made for them, because over the life of the project they are likely to occur. Finally, they need to make sure that they have step in rights so that they can step into the operator's shoes in the event that the operator fails to make good its commitments to the government. Interestingly enough, the government wants the same step in rights, and the normal order of process in the event defaulted is that a financier would step in first. In the event the financier chooses to walk away, the government will step in. As Stephen mentioned, a number of projects have failed because the risks that were transferred were not appropriately costed.

What is the opportunity as we move forward? The answer is that it is very significant, and it is especially significant in the water industry. Water treatment, water desalination, water reticulation and waste water treatment are all ideally suited for public/private partnerships. The challenges for us all—both public and private sector—is, firstly, to make sure that projects put out for consideration have been well thought through and enjoy the full commitment of the department, the minister and the cabinet. We have to make sure that the projects are of sufficient size to warrant the transaction costs associated. Much under \$50 million gets quite hard to do on a PPP basis, in my opinion, and that may require some bundling.

The public sector needs to transition its thinking from input specifications, and historically it has been involved in the design of these facilities and very tight specification as to how they to be operated, to output specifications, where it is saying, 'This is the service we want to provide to the community, please tell us how you will provide it.' The private sector has to transition itself from construction thinking. Historically, most people interfaced with the government have been thinking about it in terms of, 'What we can build, and how much can we make from a construction contract,' to operator thinking, where they have to operate and deliver a service in order to make a profit. On behalf of the panel, we invite questions.

MR BERNIE MASTERS (Western Australia): As a general rule, who can borrow money cheaper, the government or private sector?

MR STEVEN PAGE: As a general rule, the nominal cost of funds to government is lower, but you need to qualify that with keeping in mind that, when the government raises funds, it raises funds against the guarantee of the taxpayers. The financier or the funders are not particularly interested in how the government invests those funds. Were the government to raise funds specific to a project without redress to taxpayers, the cost of funds would be identical, because they would reflect the risk of that project. You need to distinguish quite clearly between governments raising money for project finance and governments raising money generally, and it is an important distinction. When you have a project, the risks of the project are specific to that project and the price of that risk will be reflected in the cost of borrowings. The fact that the government does not explicitly put a capital charge on its investments is a choice that governments make. Strictly from an economic point of view, they should require departments to pay a risk-adjusted cost of capital rather than just the taxpayer-funded rate.

HON. PETER COLLINS (New South Wales): In 1996 I was a guest of the British government to look at the privatisation of electricity, airports and water. If I were to rate them in terms of political success and acceptability, rated first would be airports, which was overwhelmingly successful in terms of Heathrow; electricity I would say at least break even; and water in the UK, which I think had some 26 or so private companies delivering water

around the UK over some decades, I would rate last. It left me with the question in terms of private sector involvement with water: to what extent does the general public perception that water is a right rather than a commodity colour and limit what the private sector is able to do?

I am inclined to accept your list in the opportunities section there, that you can do that but, if you come down to what comes out of the pipes and it is a company delivering it as opposed to a government utility, that can leave a very large question mark and, not to use too much of a pun, a bad taste in the mouth of some consumers. The second question I would like you to address is this. Where the private sector is involved and where, to take your hypothetical example, four companies may be bidding for a particular project and there is substantial intellectual property developed in terms of meeting the government's objective in providing the service, how do you better handle that so that you do not end up with the unsuccessful companies suing each other after company D gets it?

Companies A, B and C, in states like New South Wales, can rush off to the Independent Commission Against Corruption and say that company D got that because A, B and C were wining and dining government members, public servants and so on. How do you actually minimise the risk of complaint? Is it by establishing a pool of funds to enable some cost recovery on the development of intellectual property on the part of the bidding firms? Is that a solution or are there other solutions?

MR STEPHEN YOUNG: Dealing first of all with water politics and community attitudes, clearly the community needs to be taken along in a journey with the use of the private sector to provide what historically have been regarded as essential services. I think Karlene also made that comment very clearly in her speech. If the community is not ready, it is not likely to be good politics and ultimately, if it is not good politics, it is going to cause problems for someone. I think that the community needs to be ready for what it is that a government is actually trying to do, and that is a communication problem for the government of the day.

Our South Australian experience with the provision of water (as a consumer) has been positive, and I think that both United Water and United Utilities, the two private sector firms involved in the provision of water here, are perceived to be doing a serviceable job. The arguments about whether they are doing a good job or a bad job most probably are political and I will not buy into that debate. In terms of the protection of intellectual property, firstly, there are now regimes in place where the government seeks to acquire the intellectual property for a fee, so as to give itself the right to cross-fertilise, at the time of assessing bids, good ideas from bidder A across to bidder B. Quite frankly, that is very difficult to do.

The bidders do not like it because, obviously, they are seeking to retain an advantage, but where those rules are transparent and there is value offered, if the bidder does not like the rules it will not participate in the process. So, that is done in the contractual establishment of the bidding rules but, quite frankly, it is fighting with fire, because you are

trying to do something that you know that the person on the other side of the table does not want you to do. As long as you start with your eyes open, you set yourself up for a scrap at the start but, if the other side agrees, then I guess you know that you are just doing something that is a risky activity. It is possible to set up your bidding process in a way that you can get access to the intellectual property for the benefit of the government at the end of the process, even though the party may not be the successful bidder, because you do want to cross-fertilise.

The second thing was: how do you stop people alleging that the process was improper? In my opinion, governments have become nearly probity bound in the way that they go through these processes, and it is a very difficult thing to manage. If you talk about partnership, you talk about flexibility, you talk about qualitative selection criteria, you immediately set yourself up for having exercised your judgment. As soon as you use your judgment, then there is an opportunity to say, 'I can't understand why it is that you judge this party this way as opposed to that party that way. You must have been bought a lunch by that party.' Obviously, the first thing you do is you don't go to lunch with anyone, but it goes beyond that.

The probity processes are designed to protect government so, as long as the process is open, transparent and consistent and probity is applied, you should defend yourself. As for the next project, is the loser going to complain? You betcha. Is he going to try and have a crack if he can? That is the way of the world. Hopefully, from doing that they learn that they should not be surprised that they might not be invited to the next party. That is about the only way you can ultimately deal with it commercially.

MR MIKE TERLET: I would not want to dwell on the UK model too much, other than to point out that the UK model is decidedly different from anything that exists in this country and certainly in South Australia, because essentially the assets were transferred to the private sector. I might add that, in my darker moments, I rather imagined that the government took its foot off the maintenance pedal some considerable time before those assets were transferred and the private sector got left holding the bag. You might say that they have should have done their homework, but that was a serious problem.

To get back to Adelaide and our particular experience here, there is no doubt that the government's objectives were achieved right from day one in terms of cost savings and improvements in services and quality, but where things went wrong here, in my view, is that it was not sold well. A combination of mischief on behalf of the then opposition, the appetite of the media to feed on controversy, and a failure by the previous government—sorry, Mark and others involved—to clearly identify what was happening left the public with the belief that assets had been sold. The water was sold, the dreaded French and British tills were ringing and the assets had been sold—which of course is clearly not true. The public was left confused at what should have been quite a simple thing for them to understand, in that government was doing no more or less than it does on any day of the week. It had outsourced operation and

maintenance activities to a humble plumbing subcontractor, United Water, that was extremely monitored in the provision of those services.

If that had been put across, then the issue of the continual raising of privatisation and the fear, I might add, that appears to exist in the mind of the general public would not have taken place. There were a couple of other mistakes, which are not fit for airing in this particular forum.

MRS KARLENE MAYWALD (South Australia): I was talking specifically about environmental PPPs, which is difficult to quantify. Who is the beneficiary and who will invest if they do not know they have a return? The return is to the environment at the end of the day. Therefore, the involvement of the community and the political imperatives are far greater.

The second question is not really relevant in the scheme of environmental PPPs. It is more about bringing communities along to ensure they invest alongside government in better outcomes, and that the future is not a monetary return to the investor but, rather, a sustainability return.

MR DAVID CUNLIFFE (New Zealand): The chairman has granted me a brief moment to offer a word of thanks on behalf of my delegation before I catch a plane. I ask the indulgence of the panel for a minute. I reflect, in part, on the excellence of the presentations we have just had. As someone from offshore, one thing that Adelaide was supposedly known for was the fact that it had sold its water system. It is very insightful to unbundle the two questions of the asset ownership from the service provision—and the light bulb has gone off above my head as a result of listening to you today.

As we work through the specification of outcomes, and manage that within a framework that rigorously guarantees the public interest and potentially allows scope for private capital expertise, we will eventually depoliticise an issue and serve the public interest.

I come from a usually wet country. Certainly, on the west coast of New Zealand the main problem we have with water is not drowning in it. Parts of New Zealand have 300 inches of rain a year, which we pipe directly into bottles to sell to Saudi Arabia. But, as a result of El Nino and potential climate change, the patterns are shifting. On the east coast of New Zealand, in particular, and the South Island the seasons are getting drier and droughts more common place.

I will not go to Kyoto at the moment, but I will say that the discussion on water use has been extremely insightful for my delegation. Increasing scarcity of course means a likely increase in price. It has been interesting to hear the debate about price versus non-price instruments and water rights and water rights trading. We shall reflect on that.

The need for integrated systems thinking and the triple bottom line and the field trip yesterday, which demonstrated some huge win-win situations for both private and public sector around the use of aquifers, and genuine value creation, will long stick in my mind.

In New Zealand we are currently rewriting our Local Government Act and, as part of that, there is hot debate about whether we should prohibit the privatisation of water assets. My delegation will reflect on the question of whether a PPP is privatisation. I hold the view it is most definitely not. If we make the distinction between asset ownership and outcome service provision we may be able to unpick a potentially complex issue and add value to all our constituents.

In closing, I thank you, Mr Chairman, for your staff, the generosity of the South Australian government for hosting us, and the excellence of the time we have had. It has been a great pleasure day and night to meet many of you on the hustings. Thank you very much.

MR BRUCE BILLSON (Commonwealth): The Australian Council for Infrastructure Development released a press release about a fortnight ago expressing some fatigue about repeat 'journeys to the stars box' in a particular capital works project in Victoria, only to have it withdrawn and repackaged; perhaps another effort would give a better outcome was the underlying view.

The specification of service outcomes and the innovation that can facilitate, sitting alongside some indecision and a maturation of the whole PPP framework, is there a fatigue or concern or something we as elected representatives need to take on board about how far we have a go before a decision is made; the costs over time; and whether we are damaging what is a good vehicle by not being quite up to speed with how you use it in the first place?

MR STEVEN PAGE: In answering that question, we should reflect on the successes. There has been a very significant increase in the level of involvement of the private sector in the provision of essential services to the community. It would be unreasonable for the private sector not to acknowledge that, whether they be debt providers, operators or constructors.

In terms of 'what are the current attitudes', I think it is fair to say that nearly everyone involved in the process is getting frustrated by the inability of the public sector to be more definitive in the journey that it seeks to embark upon. It is accepted that at the end of the day, if there is not value for money, there will be no project awarded. But to be involved in a process where everyone gets involved, mans themselves up, forms consortiums, looks at big documents, goes through it and, all of a sudden, someone withdraws the bid because the politics got difficult or the stage changed is a very frustrating and expensive process for the private sector.

A degree of frustration currently exists. I expect we will see more of that being expressed by the participants rather than less of it. Obviously, it can be avoided by the public sector clearly thinking through what it wants, preparing appropriate briefing papers, getting approvals, and then sticking to the process but, if a decision is made to stop, it is always better to stop quickly than to limp along. There has been a couple of limp along projects on the eastern seaboard.

MR MARK BRINDAL (South Australia): I wanted to ask Mike Terlet a question by way of explanation to the delegates. South Australia is united on lots of aspects of water, specifically over the river. On the corporatisation of water we were not united with some consequent bad effects.

Mike, you talked about the good things but it is true to say that, because it became a political hot potato, there are now rather too many people overseeing the project. When I visited Vivendi, France, it was put to me that if the government had pursued its ideology it would have got rid of more SA Water staff. There are something like five people overseeing every aspect of the contract. That was a political consequence of what happened in South Australia.

MR MIKE TERLET: I have to be a little careful here; I could get fired when I get back to work. It would be true to say that, if you had time over again, the government and SA Water—bearing in mind SA Water was very recently corporatised when this overtook them—there are some things which you would take into consideration next time round. If one follows its history, the EWS went from 7 000 people baking their own bread and making their own shoes in an organisation that was complete to a corporatised entity, against its will collectively. Essentially, then, it was outsourced, also against its will, and it was then put in charge of the monitoring process of the project. So, you are going to get difficulties there. You also, I think, in hindsight, would look at the difficulties associated with being a regulator and an operator. That is not a situation that exists widely in the rest of the world. That is another difficulty.

In so far as restructuring is concerned, I mentioned in my paper that if you are going to outsource you need then to consider very carefully the structure that you leave or put in place in order to ensure that you appropriately monitor the activities of the contractor that is undertaking the activities or providing the services that were previously provided by the department or the organisation. It is not terribly complex; it is just something that, next time around, where ever that might occur, you need to think carefully about. You need to think carefully about the structure and what type of people need to exist in that structure in order to regulate and monitor to the maximum effect.

MRS KARLENE MAYWALD (South Australia): Can I add to that question from a political perspective, and I probably will not get fired by elaborating on it, that when elected representatives take the battle of the parliament outside the parliament, particularly during the

process of contracts being awarded and negotiated, that can have a significant impact on the reputation of companies and international companies in the local community. It certainly is detrimental to future private partnerships if the parliament drags through the mud the names of companies that are just entering into a business arrangement. I think that, as elected members, we need to be very aware of that and, if we are to succeed in delivering public benefit outcomes at the end of the day, we cannot afford to be dragging through the mud names of companies that are willing to invest in infrastructure within our states.

HON. SYLVIA SMITH (Tasmania): With respect to the Adelaide project, would you, Mike, promote that now at this stage, knowing all you do know and having gone through all you have gone through, as a model PPP and, if so, what would be the reasons for promoting that for other urban areas to use as a model?

MR MIKE TERLET: If the objectives of whatever it is you are considering outside of South Australia are the same as those which were the basis for the formation of the Adelaide outsourcing contract, the answer is, yes. But I think, as I indicated in my paper, you need to be very careful because there is a very close correlation between what it is you seek to achieve and the vehicle you set up in order to achieve it.

HON. MIKE ELLIOTT (South Australia): Thank you. On behalf of everyone here today, I thank the four speakers and, as is customary, I present them with two bottles of good South Australian wine. Unfortunately, Karlene, it is Eden Valley and Clare Valley wine. That is not unfortunate for anyone else, I don't think. That could be read the wrong way, too.

MR PAUL CAICA (South Australia): I do not think that we have formalised the venue for next year's conference. It has been agreed—as is the case with most of the way business is done in this house—outside these doors and now it is a matter of formalising it. I would seek an interest from those states that would wish to host next year's conference.

MR TONY McRAE (Western Australia): I formally express Western Australia's interest in holding this conference next year. That would be, as I understand it, the seventh joint conference of the two committees that are represented here and who are our co-hosts in Adelaide. Delegates, can I say that, having discussed this topic in our committee prior to coming to Adelaide, we are not absolutely certain what it is we would want to present to you. We would take the opportunity of probably looking at either major resource and infrastructure projects or at regional development projects and the triple bottom line analysis around either of those.

Depending on the time of the year we would either go into the Pilbara and include an examination of the north-west shelf, or if its later in the year and a bit hot, depending on the non-sitting times that are available, we would probably go to the south-west. They are the options the West is offering. I would be delighted if this conference could formalise our

proposal and, indeed, we would even then support the proposition that, maybe, the following year the New Zealanders could be first to their feet.

MR PAUL CAICA (South Australia): We will explore just how well outside arrangements, when they do enter the chamber, hold up. Does anyone from another state wish to put an alternative proposal for discussion? I am therefore pleased to announce that it would appear that next year's conference will be held in Western Australia. Thank you.

[Plenary session adjourned]

[Upon resumption at 1.35 p.m.]

PANEL:

'WHAT GOVERNMENTS CAN DO AND HOW TO DO IT'

HON. MIKE ELLIOTT (South Australia): Thank you, ladies and gentlemen, if you could take your seats please. We are about to start the final session. We have a panel again of four speakers, speaking for 15 minutes each, and we would ask that people keep to that time as far as is possible. The topic that the panel will be addressing is 'What governments can do and how to do it'.

The first speaker is Professor Don Bursill. Don is the Chief Scientist AWQC, Chief Executive Officer of the CRC for Water Quality and Treatment. Professor Bursill is the Chief Scientist at the Australian Water Quality Centre, a position he has held since 1990, and is responsible for the main scientific and water research services and facilities. Don is also the CEO of the Cooperative Research Centre for Water Quality and Treatment.

The CRC was established in July 1995 and its role is to assist the Australian water industry provide high quality public water supplies at an affordable price. It does this through research, education and training activities and through its involvement in policy and regulation and developments. It is through this latter area of activity that support for the Australian Drinking Water Guidelines is undertaken.

Don is the Chair of the Coordinating Committee for the rolling review of ADWG. Don has some 35 years experience in the water industry. His interests are principally in water treatment and water quality management, and his academic background is in chemistry.

Professor Bursill has some 50 publications, major reports and significant conference presentations on scientific issues related to water quality, water treatment and the development of associated analytical techniques. Professor Bursill.

PROFESSOR DON BURSILL: Thank you, Chairman. I appreciated the invitation to speak to this group today. I readily agreed to address this meeting, even before I had given any thought to what I might say. I accepted the invitation because it seemed a great change to deliver a message that might in some way influence the management of water in this country to achieve better outcomes. Perhaps it is my small chance to make a difference.

My next thoughts turned to the question that is posed for this session, and what **can** governments do and how? The following three roles spring to mind: leadership, stewardship and management. In my view, leadership is about formulating a vision, and having the capacity

to capture the hearts and minds of the community, and it needs to be accompanied by clear, measurable objectives and be delivered with conviction, honesty and action.

In the context of this discussion, stewardship is about the oversight of the water resources of this country and the associated aquatic ecosystems, with the intention of ensuring their sustainability and their protection for future generations. It is about rejecting waste, inefficiency and opportunism, eliminating mismanagement and reducing pollution of our water resources.

The management role is about implementing strategies and actions to meet objectives that will, hopefully, ensure the vision is achieved and the stewardship role is responsibly exercised. If the knowledge, skills or technology are not available this is really what defines a research agenda, to sort the problems out.

My next thoughts on this matter fell from those sort of lofty ideals to the more negative realities of the current state of some of our key water resources. I found myself reflecting on the scorecard, or 'bottom line', one could record for the progress of the past few decades. Perhaps we should briefly consider one or two examples.

You have probably heard a lot already about the Murray-Darling system, given that Peter Cullen was here earlier in the day, but it is really under great pressure and is in severe decline in many respects. Its management to date has been characterised by opportunistic over-allocation of the resource for short to medium term economic gain. Little real regard has been paid to the water requirements of the river ecosystem itself. Anyone who has been involved with allocation policy issues will know that it is a commonly held view among water licensees that water flowing past one's property is a wasted economic opportunity. More sadly, a similar view can often be found in the natural resources agencies around the country.

Across much of the basin water is used in a very inefficient manner. This is in keeping with its relative abundance (in most years) and the low level of water. Allocation policies lean heavily towards maximising water use. Most efforts to change this over-allocation situation in the basin have usually been headed off by parochial interests, at many political and societal levels. The river system in the end is the main loser.

If there is any doubt that this is a fair assessment of that situation, perhaps we might reflect on a few facts. Victoria's Goulburn Murray Water, New South Wales' Murray Irrigation Ltd and Murrumbidgee Irrigation Corporation collectively lost some 840 gigalitres of water last year from the bulk distribution system. This is before it reached the irrigators.

This wastage is approximately 150 per cent of South Australia's total irrigation allocation and approximately 1.7 times the volume of Sydney Harbour. It should be noted that these three operators are listed among the most efficient with claimed delivery efficiencies at or

above 80 per cent. Some operators claim inefficiencies of as low as 45 per cent on their own assessment of performance. Why have we made so little progress in addressing this wastage when the volumes involved could contribute significantly to river health?

Some 80 per cent of irrigation water in Australia (80 per cent of which is located in Victoria and New South Wales) is applied to crops by simple flood irrigation with only 4 per cent by sprinklers, 2 per cent by drippers and 1 per cent through microsprinklers. Why have we such a low uptake of more efficient irrigation technology and why are relatively archaic irrigation methods which belong in the time of the Egyptians still the dominant technology in place in the basin?

In the 13 years to 1998, cotton production trebled in this country and it now uses 10 per cent of all water used in Australia for a .1 per cent contribution to GDP. This is quite a bit more water than Australia's 7 million households combined use each year. Rice growing has increased some 10-fold in 4 years and now uses 7 per cent of Australia's total water use for a contribution of .02 per cent of GDP. These two industries lead the world in efficiency of production of these two products but is it wise to use much water, so much of a precious resource, on rice and cotton production in such an arid part of this country?

The more recent and heavy reliance on market mechanisms to move water from low value to higher value uses in a system where water licences are overgenerous seems to me to be the perfect way to encourage further water abstractions even though increased economic benefit has certainly result. Of course the water is not moved anywhere; it is just the right to abstract the water that is being transferred. In an over-allocated system this can mean windfall capital gains to those who have not been able to use their full allocations in the past and provides the ideal opportunity for those who purchased the water rights to abstract the water from somewhere else in the system, which is usually also overtaxed. The result is increased overall use and less water flowing through to the sea. Eventually the situation will probably stabilise, but why were the hard decisions not made to revise allocations downwards before the introduction of the water market?

The severe drought of 1967 and the River Murray Commission reports of the early to mid-1970s made Australia pretty much aware of the declining state of the Murray Darling system. It really led to the subsequent change of the RMC to the Murray Darling Basin Commission, and this heralded the increased need to focus on water quality issues rather than just quantity for navigation, irrigation and other uses. The salinity mitigation program implemented over the past 10 to 15 years has been one of the real successes arising from this changed focus. It cannot be said that we were unaware more than 30 years ago of the need for better management of the River Murray system, but it still declined further and significantly so.

It is now considered that a return to the base flows of 1970 would halt the decline in the health of the river system and that a significant improvement could be expected. What does

this say about our vision, policies and management of the past 30 years which collectively have led us to this point? Have we deliberately ignored the signs clearly evident so long ago or did we lack the knowledge and skills to address the issues effectively? Perhaps river health did not feature too highly in our priorities over that period. Obviously, cost is an issue. If the cost of conventional solutions to the rehabilitation of irrigation infrastructure is considered to be unaffordable, where is the research effort to solve this problem when a solution promises so much in water savings?

I thought I would deal briefly with a second more local example, the Mount Lofty Ranges. In 1975, the Water Resources Act, which was heralded as a progressive bit of legislation, was introduced here to protect the water resources of the state. Particular water systems believed to be under stress could be proclaimed (the term now is 'prescribed') under the provisions of the legislation. This enabled a series of measures to follow including the establishment of a water resources management committee for the area involved and the development of comprehensive water resource management plans to guide actions and decision-making. Significant state resources would then be applied to help bring those resources into a more sustainable situation.

Not long after this legislation was introduced, South Australia quite correctly proclaimed important water resources such as the River Murray. We also proclaimed smaller systems such as the Angas-Bremmer groundwater system, which was needed to protect localised horticulture and winegrowing activities. We even proclaimed the Bolivar outfall channel. That was done to facilitate licensing to some irrigators who were already taking water from that outfall channel mainly for pastures at that time. The irony in my view is that the Mount Lofty Ranges, which supplies 60 per cent of the water supply to Adelaide in an average rainfall year, has never been seen fit to be managed so carefully as the Bolivar outfall channel.

In the late 1980s a report from the then engineering and water supply department highlighted the gross pollution and careless land management practices that were commonplace in the ranges at that time. The risks to public health were obvious. The community seemed outraged and the media gave it a lot of attention. The government of the day subsequently announced the Mount Lofty Ranges Review which was charged with sorting out all of this mess. The review kicked off with great endeavour and enthusiasm. A wide range of task forces, committees and working groups were established. Finally, the Mount Lofty Ranges Management Plan emerged from all of that. However, it was a disappointing outcome in my view as it provide little advancement on what was happening in the past. Some improvements were made, but the interest of primary industries, local government, land developers, tourism and others prevailed well and truly over and above the concerns for the water resource. Sir Humphrey was alive and well in that process.

Of course, it has not all been bad news. My written paper, which I hope you will take the time to have a look at, outlines some of the good actions that have occurred, some of

them in more recent times. However, we have not yet managed to make a real attempt at more sustainable management of this resource, notwithstanding the availability of the legislative arrangements to do so. One can still see cattle grazing in and around the banks of streams—and even in the streams—not far from the intakes to metropolitan water supply reservoirs. The regular detection of pathogenic organisms such as cryptosporidium and giardia are the result of this sort of practice and this, in turn, places undue reliance on South Australian Water Corporation water filtration facilities to protect public health.

Who is to blame for this poor scorecard? Of course, we all are to some degree. Perhaps our community is still too complacent on water issues, although this seems to be changing. Perhaps economic objectives have been too strongly targeted when greater concern for the environmental consequences and sustainability issues might have been shown. Perhaps I am wrong and great visions and strategies have been in place for some time only I have missed them. Perhaps some might even think we are travelling quite well and that there is little need for change.

It seems to me that the way forward requires a much clearer vision from our leadership and a process of enlisting the support of the vast majority of the community to see it achieved. It would be instructive to examine how others have achieved success. In the 30 years of increasing decline of our key water resources in this country river systems such as the Rhine and the Thames have seen tremendous improvement. These rivers flow through heavily populated areas with intensive agricultural and industrial activities. In the past, these pressures resulted in heavy pollution of these rivers with an attendant severe decline in environmental status.

The establishment of a clear vision to see these rivers restored to health was the key to their revival. In the case of the Rhine, all of the governments in the Rhine catchment agreed that they wanted to see salmon back in the river again. This iconic objective was accompanied by a number of detailed water quality objectives from which various strategies and actions could be derived to ensure success. Remember, when this was derived many of these countries were at war with each other, not all that long before that time. At least we are in one country here.

In my experience we generally are reluctant to establish clear water quality objectives for our water resources, nor do we set up good monitoring programs to gauge our progress; for example, only 28 per cent of drainage channel outfalls going back into the Murray-Darling Basin have any sort of monitoring of volume or quality at all. The salinity goal of 800 electrical conductivity units Morgan is one clear, measurable objective that was set some years ago, and it could be asserted that this simple key reason is why the salinity mitigation strategies of the Murray-Darling Basin Commission have been such a success. Progress against the objective could be easily measured.

A pessimist might hold the old adage that the best indicator of future behaviour is past behaviour. I do not really subscribe to that view, and I still hold out hope of healthier rivers, better water quality and less wastage of our valuable water resources. This needs more effort than just relying on simple economic measures and policies. Lessons can be learned from the successes of other countries. If action is not taken by governments, then who will do it? In your important leadership positions, it is my view that you can make a difference.

HON. MIKE ELLIOTT (South Australia): Robyn Dixon-Thompson is the owner of a business Rob's Water Systems, which is situated at Port Lincoln, on South Australia's west coast, and that business was established 32 years ago. The business involves sales and service on all water equipment, irrigation, water reticulation and aquaculture, in an area covering Port Lincoln to Kimba to Fowler's Bay. He is a previous member of the Eyre Region Water Resource Planning Committee and is actively involved with water issues on the Eyre Peninsula.

MR ROBYN DIXON-THOMPSON: You sit in this chair and you get the feeling you are being looked at. I realise why they put the photograph of Sir Thomas Playford on the wall. Fancy my sitting here and telling him what governments can do and how to do it! My daughter works as a missionary in Zambia. She looks after children who have been orphaned because of AIDS, and it is a huge problem in Africa. The other day she said to me, 'Dad, all I ever hear in this house is the problems with water on the Eyre Peninsula, and the state and Australia. We don't have a water problem in Zambia.' I said, 'That's great. I thought you had enough problems as it is.' She said, 'Dad, they have to cart the water 5 kilometres with a bucket either on their head or carried by hand.'

South Australia is a civilised country that does not have to do that. However, we have other factors such as complacency which the Zambian people do not have, because they have had to accept very closely that water is a very vital part of their life. Not one drop is wasted. Given the amount of water that is wasted in Australia by taps being turned on, you have to ask yourself, 'What has gone wrong with Australia?' I have had heard some magnificent speakers since I have been here. Over the 12 months, two years since water has become a more important issue, there have been some magnificent comments.

Do you know what I saw today? I came up Port Road after getting off the plane. The wind was puffing at about 20 knots, and at the old gaol they were trying to water lawns. Who is kidding who? I would presume it is a council, and I would presume that it is trying to water in a 20 knot wind. I do not have to be an academic to tell you that the waste is probably 30 per cent. I read in the *Sunday Mail* that the reservoirs will be empty and they will pull 60 per cent out of the Murray. I was shocked to hear that, given what is happening to the Murray. Nobody is believing you or what was happening on that lawn would not take place. What happened on that lawn there is happening all over South Australia today. The wastage of water is absolutely

criminal, and nobody is leading the charge. Where is government? Where is government showing a direction on a simplistic little thing like that?

Why has that council not got automatic or underground watering systems to conserve 30 to 40 per cent of its water usage? If that is transposed to the rest of the state, you realise how much you will save. However, you do not see that, do you? You do not see that, because local government, along with state government and federal government, do not want to upset the whole situation. Is it really the fact that the water is too cheap? Are there other aspects that we have ignored? Is the rhetoric too great and the action so less? When we walk out of here, what will we do?

I ask you all the following question: if you were driving down the road in the country and saw water around a sheep trough, would you stop, go to the farmer and say, 'I've fixed your trough; you'd better go and put a new ballcock on, because about 1 000 litres of water are around the trough?' Would anybody here walking down a road and seeing a hose from someone's garden running on to the road, turn it off, knock on the door and say, 'I've just turned off the most important resource available to mankind in this world, and you are wasting it?' Ask yourself that question, and come up with an answer—not to me, but to yourself. I presume most of you people are politicians, departmental heads or whatever and are in the position of leadership. Stop the rhetoric.

If every politician walked in and turned off a tap, and knocked on the door and then kept passing that on, can you imagine the results? The lady would be shocked because she probably has not seen a politician for one or two years but he came in to turn to tap off to save her money. Not only that, he has enough initiative to be able to protect the state's resource. That is what governments can do—we do not want rhetoric. We have to adopt a little practical application to the whole matter.

I want to tell you a story. We have a town on Eyre Peninsula called Coffin Bay. Members should not get the idea that everyone is buried and everyone is dying, and so on. The town is not like that at all; the contrary is the case. It is a beautiful little town. It is a great tourist place. If you have not been there, include it in your next holiday. I do not know how it got the name Coffin Bay. It has an incredible situation: for three to four years between 20 to 30 per cent of the water of the Coffin Bay pipelines has been running out through the leaking pipes. Where did it go? It went into the calcareous sand and just dissipated. It is fixed up now. Do you know why it is fixed up? Because, quite frankly, Coffin Bay is running out of water. There can be no more house connections in Coffin Bay until they get desalination or something else there.

I would go so far as to say that there are a lot of Coffin Bays around the state and Australia wasting water. However, nobody cares until the resource dries up. We are facing that on Eyre Peninsula, and we have to face it very hard. You have to ask yourself the question:

why has it been left? Suddenly they are putting up posters everywhere to say that water is precious. Where were the departments three or four years ago when we had plenty of water? If you listen to all the speakers today, you realise that the water problem has been around for years. However, nobody ever worries about it until they run out. The question is: is government not there to show leadership? Is government not there to be able to lead the people? Is it not the responsibility of government to be able to show that, as an elected representative they care, not only to get re-elected but about a resource that is as important as petrol is to a motor car?

I must say—and I see that he is here—that I believe the previous minister put in place a program that was probably the most enlightened for the whole of South Australia for the time being and for the time past, and it is very pleasing to see the new minister taking on board what was put in place and running with it. You, as politicians, are used to fighting for your cause, fighting for your party and everything like this. I would go so far as to say this: water is the only issue on which you have to combine, and any politician who is going to try to make political gain out of a water issue should not be in the house or be elected because, quite frankly, what it is all about is having enough vision, enough guts, enough determination to do something for the future of the state and of the community that you live in, and that is what you are elected for.

You would not try to run the modern motor car with oil in the petrol tank, so why are we procrastinating? We have all the advice in the world, yet you will not make the move because you are frightened politically that it might work against you, whereas, believe it or not, the people are looking for leadership and they could not care less about party politics or anything else, because they are worried about their future, too. There will come a time when someone is going to be forced to turn off the watering of public lawns. If it is kikuyu, it will just go brown and come up in winter time. If it is some soft grass, it will die. It is only then that the people will realise that there is something wrong, so why leave it till then?

Why leave it, when we have sitting in front of us one of the most alarming situations that only the government can do something about in leadership? I am saying that it is more than that: it is government and opposition. You have to be seen as one, leading the charge on the water issue. Forget about your politics: you have that wonderful responsibility. When you leave your jobs, your departmental heads and things like that, you can say, 'I did my bit.' I am very disturbed at the situation of the firing of people from departments like SA Water. You are diminishing a situation under the guise of economics and gain, hundreds of years of experience, and you are not replacing them. You are taking them out of a system that in country areas is nearly impossible to replace.

The hundreds of kilometres of pipelines that have been down since 1920 are close to getting something done about them, but they will be impossible to replace. Do you know what it is like? This week I was 300 kilometres from my home, putting in place a watering system where a million gallon SA Water tank will not be able to be kept full during a fortnight of hot

weather, and there will not be any water coming out of that. You cannot understand that on three days of hot weather there are pipelines that are shut down because they are so old that the pressure is so great it will blow them to bits. You will operate all of this under the guise of economics when the people out there deserve water as much as the people sitting in the city. This is the situation that we face.

It is the government's responsibility to show leadership to the whole of the state, and there have to be ways and means of doing this. I really enjoyed the bankers etc. who were here before lunch but, quite frankly, they will not touch any of those small pipelines. There's not a quid in it. That is the responsibility of government. It is a great privilege to me to be sitting here listening to the academics and other people. All I would say is this: we do not have to cart water five kilometres to use water efficiently but, if we are not careful and if the government does not show leadership, there will be people carting water in buckets, like the third world. Thank you.

HON. MIKE ELLIOTT (South Australia): The third speaker is Nathan Miller, Sales and Marketing Manager for Netafim, a multinational irrigation company based in Israel. I understand, from earlier discussion with him, that it was his company that first invented drip irrigation.

MR NATHAN MILLER: I am the Marketing Manager of Netafim in Australia and South-East Asia. Netafim is the company that invented drip irrigation. What is the task in hand? In general, coming down to the nitty-gritty—and I will speak here for 15 minutes or so about the nitty-gritty of the issue of water conservation—what we are trying to achieve is to use less water in agriculture and domestic applications. What needs to be done in order to use less water? First, we need to develop engineering and agronomic tools for users to apply less water. I strongly believe, first, because of my job and, secondly, because I really believe so, that the suggestion eventually will be an agronomical and technical solution. People will not start using less water. People will not drink less water and they will not shower less—at least I hope so—but we need to find a way for them to use less water for whatever they need.

After we develop the tools to do it we will have to market them, and then we will have to train the end users how to use these tools and this technology. Which tools are needed for using less water? I will speak here mainly about irrigation and the application of water for irrigation. There are two main users of water in this area: one is landscape users, and we need to find domestic solutions (I mean for everyday households) and we need to find commercial irrigation solutions. I must admit I did not come from the airport but from the Hilton Hotel, and the lovely Victoria Square has beautiful flowers and the sprinklers are working.

I don't want to get into trouble with anyone here, but the sprinklers were working and the pavement is extremely clean and wet, as are the roads. I have a question about the flowers. But seriously, it is not only Adelaide. Everywhere you walk, in each state and town in the country, you will see the same thing. I can tell you now that there is no reason on earth for

that to happen. You can apply the water any time with wind, without wind, and not wet the pavements and waste the water. The technology is there commercially. I will speak about that shortly. Obviously, we need to find agronomical solutions. An agronomical solution is for plants to use less water with the same results—same quality of fruit or vegetable and same yield. We must find a way to apply less water. As far as I can see that eventually will be the solution.

In general, the sequence of finding solutions—and I will not elaborate about it now—but, in general, it is R&D development for agronomical and technical solutions to develop product that will satisfy the research and development, then to market these products and then to trade. I will elaborate about all that in a short while.

In order to explain what I want to say, I chose to use two case studies. Both case studies show cooperation at government level—and when I say 'government' I do not speak about politicians but, rather, people working in public jobs. The objective for case study No.1 is to reduce water application in vineyards. I am sure a lot of people from South Australia understand that vineyards is not only a crop but also a culture. Everything to do with vineyards, from a marketing point of view, is significant.

The objective is to reduce water applications in vineyards. For example, in the Barossa Valley there is a lot of land but very little water. Therefore, we cannot utilise the land. However, at Padthaway the salinity in the water has increased in the past 10 years from 900 ppm to about 1 800 ppm or 2 000 ppm, to the point that it endangers Australian wine to be perceived as salty wine.

The research was done by Dr Brian Loeys (CSIRO), Dr Peter Dry (University of Adelaide) and Dr Michael McCarthy (SARDI). The funding for the research, not for the solution, was funded 50 per cent by growers' contribution and 50 per cent by the commonwealth. The solution is a PRD—an irrigation management technique.

I will explain the solution. PRD stands for partial root zone drying. There is a way to fool the plant and to irrigate the plant alternatively from one side to another; to irrigate only half the plant and to dry the other side of the plant and to fool the plant to think it is getting sufficient water. When the part of it that is drying is dry you switch sides to irrigate the dry root zone and to dry the wetted root zone.

We fool the plant and it grows giving good yield and good quality with half the amount of water. The result is a significant saving in irrigation application with no loss of production. When speaking about vineyard loss of production it is, first, yield and, secondly, quality of fruit.

Dr Michael McCarthy, a leading researcher in the past few years, came to Netafim and said, 'That's what we found. That's the agronomical solution. We need a product to deliver water to alternative sections, to deliver the same amount of water to one side of the plant and then the other side of the plant whenever we decide to do it.'

We developed this dripline. It is two driplines connected to each other. The spacing between the drippers is very accurate, according to requirements. As a result, you can irrigate one cube for two weeks, then move to another cube for another two weeks, and you can practise this agronomical solution in a commercial way.

Then the commercial sector came in even further and companies such as Orlando Wyndham, Yalumba and McWilliams, the big wine companies and a lot of vineyards, started practising this method. Quite frankly, we are just shifting a full container of this dripline to New Zealand as well.

We can see a combination of initiative from research and government employees in research. We can see the private sector answering the challenge with the right product. The challenge now is to increase the rate of production of growers and—we have not spoken about it up until now—for more extensions officers to educate the users how to use technology.

Another thing to keep in mind is that technology in irrigation is increasing very fast to the point that growers find it very difficult to adopt and deal with it. We need the ability to train and support these base growers with all kinds of technologies. I think the government has a role to play here, mainly with extensions officers and budgeting and their endorsement of products that will save water.

I will go quickly through the next case study. The water corporation of Western Australia has supported the trial of the Netafim FloriCOM soil moisture controller. Every household that opens irrigation in the garden will open the automatic irrigation for 20, 30 or 40 minutes. I guarantee 50 per cent of the time the water is wasted. More plants die in Australia from over watering than under watering.

It is almost impossible to kill lawn with no watering. Lawn is a weed. But we over water in every single household in Australia. This device will open and close the water according to the plant needs. Therefore, you do not determine how long you want to irrigate. You determine the amount of water the plant needs. When the plant has this level, it will stop the irrigation.

As I said, the water corporation of Western Australia sponsored a trial. We found out that the FloriCOM is reliable and suitable for use in the domestic irrigation systems in Perth. We did it in Perth. The FloriCOM will save water when properly installed as part of a

well designed automatic domestic irrigation system. cost is somewhere between \$250 and \$300.

The recess questions are, therefore: what is the criteria that determines the FloriCom's suitability as a soil moisture monitoring unit for using domestic irrigation systems; and, if the FloriCom is considered suitable for use in domestic irrigation systems, what are the potential water savings? Preliminary results show that the FloriCom operated well under the conditions at the trial site and that it has contributed to significant water savings. The SMC (soil moisture controller) has worked reliably with shrub sprinklers, micro-sprays and drip irrigation. When assessing the water use efficiency of the three methods of irrigation, drip-line irrigation is clearly shown to be the most efficient.

I can tell delegates now that, in 95 per cent of cases, there is no reason on earth to use sprinklers as a method of irrigation in landscaping. I can show you hundreds of sites in Adelaide, Perth and in New South Wales that use drip irrigation sub-surface. There is no wastage of water and no evaporation, or very little evaporation. The water savings brought about by using the SMC and the drip-line during the weather conditions experienced during the months of autumn and early winter does not appear to have compromised plant performance to any significant degree.

The challenge is the adoption of the technology and the government has a role to play besides sponsoring the trial. I must admit that when I am doing my marketing plan and when I am speaking about water issues I am looking at the opportunities. We are specialising in developing this kind of product. We need help to adopt the technology. We cannot wait for two years. The government can do it. The government can help us. The government can endorse it and the government can demand that households have a device that will irrigate according to the requirement of a plant. In summary, the responsibilities are as follows:

- research and development—government and private sector
- product and solutions—private sector;
- marketing the need for water savings—the government;
- marketing implementation—government and private sector;
- training—government and private sector;
- assessment—the government.

The government needs to assess the results of what it is doing. That needs to be done by the government. Government can initiate research and development among the private sector and assist with adoption of technology and irrigation solutions. Thank you.

HON. MIKE ELLIOTT (South Australia): Thank you, Mr Miller. The final speaker for this session and for the conference is Stephen Hains. For the last 12 years Stephen has been City Manager of the City of Salisbury, with a population of around 115 000. Prior to

joining the City of Salisbury, Stephen spent eight years in the South Australian government where he was Director of Planning within the former Department of Environment and Planning where he chaired a number of statutory boards in the planning and environmental fields. In his earlier life Stephen worked in Canberra for the commonwealth's Department of Trade and Industry.

He was a consultant economist and town planner and he was the CEO of an inner city local government in Adelaide. Stephen is qualified in economics, planning and local government management. He is a member of a number of boards, including South Australian Business Vision 2010, the Northern Adelaide and Barossa Catchment Water Management Board and the Electronics Industry Association. He is a past National President of the Planning Institute of Australia.

MR STEPHEN HAINS: I am pleased to see so many of you still here after what must have been an arduous conference. It certainly looks like it was an interesting program, and I only wish I could have been able to sit where you are and enjoy it. In relation to these local government watering practices that have just been impugned (one on the Port Road and another in the city), I might mention to those delegates from interstate that those two councils in South Australia have access to free water. Their historical access to free water gives them no incentive whatsoever to be undertaking appropriate practices. As someone who manages a council that pays for its water, I find that a terrible burden to bear.

We were very honoured that conference members visited Salisbury yesterday. I hope that you enjoyed your tour. We have had plenty of time to talk to you about our Salisbury wetland program. You would have heard that we began the wetland program in an area that is a very flat coastal plain. In order to try to get the protection of our suburbs to enable development to occur a lot of fairly low cost flood detention basins were required because of the flat low-lying land. That process really began as flood detention about 30 years ago. It followed on into a very significant process to try to use it as a recreation asset.

We found that, as a result of water pooling and being detained in stormwater detention basins, we were able to provide some recreation asset, and particularly a wildlife asset, and in those cases we depended very heavily on one or two key people. Some of that area has some of the richest avi-fauna in Australia, created largely through those artificial wetlands. Quite a lot of rare species breed in those wetlands and many rare and native fish have also entered the area. That was a key driver of our program through to about the mid 1990s. Early in the 1990s, though, we became very concerned, as you would have heard yesterday, about the ecological health of the Barker inlet, which is outside our council territory.

It was adopted as something of a totem by our council as a sort of environmental goal to try to stop any polluted water going into the inlet and contributing to what we thought was a potential ecological calamity. We still work very hard on that issue and it has been a

major driver for us. I think, hopefully, that we have made some efforts to try to clean up the outflow. I acknowledge also the work that has been done by a number of other parties, SA Water, in particular, in recycling a lot of the sewage effluent from Adelaide that is now being used in the Virginia market gardens. We then found, though, that we wanted to off-set this huge cost of using water for irrigation.

We have a very large amount of open space in Salisbury and we wanted to try to find some way of off-setting our \$1 million plus costs in water. We started experimenting in the mid 1990s with aquifer storage to try to find some alternative to mains water in areas that were close to the bores. It was an expensive experiment because each of those bores cost about \$250 000, so they need to be justified. However, we did our sums and found that we were justified in sinking those bores within two years of drilling in terms of the off-set cost we would get. As you have also heard many times, the amount of water that falls on Adelaide far exceeds Adelaide's total consumption.

The amount of stormwater that flows into the gulfs just from the streets and roads is equivalent to our total consumption. So, clearly, there is quite a lot of potential for the reuse of that water. Particularly, we found that far more water was coming in, and that we were able to capture, than we needed. We did try to assist a number of local industries by giving them some opportunity to transfer our rights to draw. As you know, we were pumping water back. A water meter is on the bore head and that gave us some rights to draw the water. We were transferring those rights to some local industries initially free of charge in order to give them some assistance.

We have since found that the potential of this was much more significant, and it has developed into something of a real water business, if you like, in terms of the actual charging for some of this water and providing water to businesses like GH Michell, that you heard from yesterday, and General Motors-Holden's, and others that are taking our water. It is an interesting transition from where we started about 25 years ago through to today, and it still has quite a long way to go in terms of the realisation of its potential.

I want to make a few brief points, because I know you want to actually have a discussion at this stage of the conference. But I just want to make a quick point on public policy on water supply, something about intergovernmental cooperation, some issues for legislators, and some points on making a difference.

In relation to public policy, I think Don's masterly address to you—and I am going to get a copy of his paper—demonstrates quite clearly that the Murray still remains South Australia's number one problem. There is absolutely no question that that remains a key issue for us, and that every effort must be made to offset further deterioration, if only for environmental flows. But it is critical that the Murray is dealt with, and a lot of Don's

suggestions were very appropriate. But the point that I am coming from is that we also must find some alternative sources.

I would agree with the point that we also must find alternative ways of using our water, so that we are not vulnerable to one particular source. As we all know, a lot of the Murray's problems relate to the movement of ancient saline groundwaters, and, no matter all the things that we do, there are real limitations to our ability to even stop further deterioration of the River Murray. So we do need to find some alternative sources so that we are not vulnerable, to try and preserve the environmental flows to better use our resources, and obviously for the economic benefit of the many communities that rely on water.

So, in relation to intergovernmental cooperation I just want to make the very obvious point that the cooperation between the three spheres of government can be hugely powerful for all of us. No single government should try to work on this issue alone, and I think that is an issue for all of you who come from state parliaments. It is important to try to build partnerships, even with the influence and authority of the state, because it is through the partnerships across the different spheres of government that we can really achieve the best outcomes. I think also this issue, along with others like this, can itself be a really useful tool to foster better collaboration. It is a great way to actually build partnerships between governments.

I turn now to some of the issues for the legislators. These are numerous, but issues that we have faced are things like the ability to have licences for long-term aquifer storage and recovery, rather than licences that give us authority to draw for, say, 12 months. To do the sort of investments that you saw yesterday, we have actually entered into those investments with a good deal of faith and trust, because we have actually had to sign contracts that are 40 year contracts, based on annual licences—which is not a good risk management strategy. There clearly is a need for us to have an ability to enter into much longer term arrangements than that.

I mentioned the point that you do need to have a degree of courage in environmental assessments. Courage is not a word that politicians like to hear very much, but there is a conservatism that can prevail in relation to environmental assessment matters and it is important to actually be prepared to really work hard on the research and work hard on trying to find the solutions with a can-do attitude, even within the necessary environmental parameters.

On the issue of riparian rights, from our point of view, as you would see, we collect stormwater that flows across other local government areas. The issues about whose water it is, and actually how you deal with that and what you can do still needs a good deal of work. There are issues that we face in relation to protection of rights to groundwater storage. If we are going to invest the money we are in terms of building a substantial reservoir of water at 200 metres

depth, how can we protect that from anyone else getting a licence to drill down and take that water, and what sort of protections are there?

I make the point, in relation to the first point and that last point, that there is some quite good legislation in Florida, which actually deals with these issues, which is actually seeking to provide protection for a groundwater resource over an area, and providing long-term licences from the government to actually use that groundwater source. I think there is work that we can do in that respect. Our own Water Resources Act has not been set up to deal with those sorts of issues at the moment, but really does need to consider those.

On the issue about the conflict that can occur between government business enterprises and the environmental goals, there are imperatives that apply to government business enterprises, like South Australian Water, in terms of their water rating, and the effect of a reduced market share by others recycling water, like ourselves, which, effectively, means that the infrastructure costs have to be borne by a fewer number of ratepayers, which leads to potentially higher pricing. Those issues must be dealt with because there is a clear conflict in goals there and somehow we need to resolve those sorts of issues.

I guess my final point is to just draw the clear conclusion, that I think Don has also drawn, that all governments can make a real difference by working together and by adopting a strong and coordinated vision which we can actually develop jointly and stick to as a community. As I said earlier, we set a vision relating to the Barker Inlet 10 years ago, which has driven a lot of what we have been doing, even though it does not have much to do with our particular business, and I think all sorts of benefits are coming out of that in areas that we had never anticipated in the first place. So if we do actually work together and work on a strong, coordinated vision I think it can be very beneficial. Thank you.

HON. MIKE ELLIOTT (South Australia): Thank you Stephen. Are there any questions of any of the speakers?

HON. DIANA LAIDLAW (South Australia): A question to Stephen: you made reference at one stage to 'our water'. I have been interested, in working through these matters over the last few days, whether we are right to be talking about property rights and whether we should be talking about the leasing of water and not a right to water. When you talked about 'our water', you see it as your right to water which is then leased out on a market arrangement to whoever may buy it? You did add, though, that there may be some debate whether it is all your water, because it comes from other council areas. And so I am just wondering whether you have worked through some of those issues.

MR STEPHEN HAINS: I think it is a very good point, and it is actually the nub of some of the issues we need to deal with. The actual water is not the thing that we would claim ownership of. I think what we would claim ownership of, though, is the added value that we

have put into the water. I think that is the same as SA Water would put with the added value that is placed in the water that goes into the domestic supply. It is the added value of treating it and distributing and all the rest of it that somebody needs to pay for.

From our point of view there is a degree of added value that has gone into supplying water that I think needs to be recognised in any pricing issue. But we also believe that there is a need as a government, at any level of government, to recognise that there is a need to say that we are contributing value to water for environmental benefit, and even if the water is only going back into the system, into the drainage or into the creek system, adding value to that for environmental benefit is also worth while. It is an important issue in that sense. The public authorities need to develop a set of environmental accounting processes in addition to their financial accounting because they need to see on their bottom line the added value that they put into environmental flows.

MR HARRY JENKINS (Commonwealth): I would like to acknowledge that Robyn Dixon-Thompson has asked us to be leaders and seek out those who are wasting water. I want to go to a macro-scale about something that might be considered waste. Professor Bursill gave us figures about the cotton industry and rice growers. The figures that he quoted were picked up yesterday in the *Age* by Tim Colebatch. Whilst acknowledging that those two industries are efficiently using the resource, the fact is that, for what we get as a result of the amount that they use, when we look at that figure for cotton accounting for .1 per cent of GDP but using as much water as 7 million households, how long do we go on preaching that that is a wasteful practice, and what should we be doing in our legislatures to suggest other alternatives or that it is inappropriate in the places where it is happening and that there are alternative ways in which those industries can continue to contribute?

PROFESSOR DON BURSILL: I got those figures from the *Age*, and I acknowledged that in my written paper. It is stated that our rice and cotton producers are the most efficient. My reading of that is in relation to other countries from an economic perspective. If you look at the water efficiency issue, I mentioned that 80 per cent of water used in all irrigation in this country is still used under old archaic flood irrigation practices and that 13 per cent is used for furrow education, which is really the same thing except that you are using shovels instead of bulldozers to distribute things around. That leaves only 7 per cent for sprinklers, which we have heard are not too flash, but they are a heck of a lot better than flood irrigation, and only 2 per cent where drippers are put in place. So, from a water use perspective it is still an appalling mismatch between the availability of water in this country and the way we are applying it. You cannot even excuse the economic outcome when you look at what a small contribution those two industries really make to the percentage of GDP.

I am not an agronomist, so I do not know whether drippers can be used to grow rice, but why should we grow rice in the middle of what is almost desert in Australia? How did that ever come about? I do not have the answer on how to redress that problem, but I should

imagine it will be a long-term issue. I am impatient when 'The Living Murray' discussion paper that is out for debate at the present moment contains a lot of good information, but it is a typical document containing a lot of platitudes about great advancements in the efficiency of water use in the system when only 7 per cent of it is not using archaic methods. How can we be content with that rate of progress?

MR MARK BRINDAL (South Australia): I want to ask the panel for their opinion. We sent Sir Charles Cameron Kingston to look at water law around the world and we predicated the Australian system on the fact that water is beyond ownership by an individual or even by the Crown, that it is part of the common wealth, and we then assigned rights to the use and enjoyment of water. In comparison, the state of Israel said that from the time when God virtually created water it was the property of the state of Israel, so it belongs to the corporate entity that is the state. As legislators, should we change the basis of our water law and say that it is part of the common wealth but that it is within the competency of the governments of Australia on behalf of the people and the environment of Australia who actually own the water? That strikes me as one way of putting a value on it and insisting on some rules. At present all we are saying is that we can assign your use and enjoyment but we want you to be more efficient. We do not own it, neither do they. Everyone is wasteful. Is this part of the problem?

PROFESSOR DON BURSILL: In the particular context about which I have been talking, I would agree with that supposition. I find it incredible that we allocate so generously to such inefficient water users. In 'The Living Murray' document we are raising the debate about whether we need taxpayers' money to buy the water back to put it into the system for river health purposes. A matter of a handful of years ago, there was no water market. The people who have been given that right and given a market opportunity have got these windfall capital gains. If usage was tightly controlled already perhaps that would move the water used to more high-value areas, but there is so much slack in the system that at this point it is not a very good measure.

Again, not being an economist or an expert in these fields, I cannot believe that we did not reduce those allocations substantially before we ever allowed the market to be set up. I do not think that water should be regarded as a commodity like electricity and so many other things. There was a time in our development when we never had electricity, but there has never been a time when we could survive without water. People hold it a lot dearer to their existence. Unfortunately, that is less so in Australia. You would think that we would be at the top of the hip parade. Countries such as Germany who have plenty of water believe that a good quality reliable water supply is fundamental to their whole level of society. I think we need to change quite a bit in that regard.

MR STEPHEN HAINS: I generally concur with that suggestion, but I think it is a problem as long as governments try to run water businesses as well. It seems to me that there is

a fundamental conflict in the role of governments trying to actually run a business and also performing the role of regulator. I think that issue needs to be dealt with.

MR BERNIE MASTERS (Western Australia): In Western Australia, we have the world's third biggest freshwater crayfish, the marron, which is also the most tasty. Could we hire out those three wetlands of yours which are protected from birdlife? I think we could do a deal with Salisbury. I want to direct a question to Don. I need to challenge you (politely, of course) in relation to your claim that the cotton growing industry at New South Wales only contributes .1 per cent of GDP. That is a statistic, and we all know what we can do with statistics. If you are suggesting that we close down that industry, we only need to close down 1 000 industries in Australia and we will have no GDP. Are you suggesting that we close down that industry or are you saying that we simply get smart in the way that Nathan and others have been talking?

PROFESSOR DON BURSILL: Obviously, I am not suggesting that we just declare tomorrow that cotton will not be grown. On the other hand, I would be a little bit tighter on rice. I mean, that is .02 per cent. I got these figures out of the *Age*—I assume they are accurate—and I have referred to the sources within the written paper. I suggest that we all be a little bit tougher about how we go about making these industries' water use efficiency much better than it is. I cannot help but come back to the fact that 93 per cent of the water they use is used with technology that was around when the Egyptians were building the pyramids. Yet, in 'The Living Murray' document we are complimenting our irrigators in this country for the great strides that they have made in efficiency gains in water use. We should not be so kind to ourselves when there has been such poor progress.

MR NATHAN MILLER: The issue of cotton was brought up a few times in the last hour or so. I would like to clarify a few things. Using drip irrigation for cotton increases the yield of cotton by between half a bale to a bale. In New South Wales there is a company with 1 000 hectares of cotton under drip. And on the same land they increased their yield of cotton by three-quarters of a bale.

The problem with drip irrigation in cotton is that, first, the prices of cotton fluctuate quite a bit. In the past few years, they have not been that great. The other thing is that most growers have already invested money in other irrigation methods such as flood irrigation. Therefore, to ask them to switch to drip irrigation is to ask them to invest the same money on the same land again, and they would find that very difficult to do given current cotton prices. What we as a company are trying to do now—and we will probably come up with a system in the next year to 18 months—is develop a low volume system. In general, that would be a drip irrigation system that will work on very low pressures—almost flood irrigation pressures—and will be able to connect directly to the flood irrigation system the grower currently has. The government should play a role by trying to find a way to help the growers to switch from flood

to drip irrigation. Most growers will agree that they will get better results with drip irrigation. It is just a question of finance.

PROFESSOR DON BURSILL: I would like to make one further point about cost. It is hard to find out what the real costs might be. Having worked within an engineering organisation but not having been an engineer, I have seen so many times when the people who do not want to do innovative things, just cost the thing out of all reality, when it is probably a possibility. I noted in my written paper—I did not have time to make the comments on the way through—some comparisons. I am told that the costs are too great, for example, to eliminate these 13 000 kilometres of open urban drains that lose such horrendous volumes of water every year before it ever gets to be used by drip or flood irrigation. Yet we do not seem to be doing anything much about it. If we do not know how to do it, where is the research program? I put those costs alongside some of the other things.

I do not know whether this is true, but we have heard lately in the media that we are looking at more than \$5 billion cost overruns on current defence procurement contracts. We spend as a community across this country quite a lot more than that in gambling losses every year. The total amount the cotton industry makes in this country is still less than the total gambling losses in South Australia each year. In terms of perspective about what a community can and cannot afford, I cannot understand why we cannot afford to fix our key water resources. It seems so simple to me. I know you cannot just shut down whole communities, but where is the effort to put us on the right track? This is why a clear vision, pronounced through cooperation at all government levels across the country—after all, we have not been warring against each other within the last 60 years as the Rhine catchment people have—should be adopted so that we can get these objectives outlined and get on with fixing the job.

HON. MIKE ELLIOTT (South Australia): I will make an observation. With regard to this question of trying to shift the use of water—and you might like to respond to this—it seems to me that there are two mechanisms that are not mutually exclusive. First, we make the water more expensive and then it will move for the best economic use because of that pressure. Once we have full transferability of licences, we could adopt a method that was used in the rock lobster fishery in the South-East of the state. Basically, they said that every fisher will lose 10 per cent of their pots right across the board. What happened then is that some people who did not have enough pots had either to buy more or sell out of the business. However, nobody was financially worse off, because they still had the same share in terms of the water that could be used economically.

Once we have full transferability of licences, you could say, 'We will claw back 1 per cent a year.' Within 10 years, you would have pulled back 10 per cent, and you will find that licence transfers will keep people economically. Nobody would be going out backwards because they have still retained the same value share of the water resource.

PROFESSOR DON BURSILL: I would like to make two points. I would like to encourage people to stop talking about the transfer of water and start talking about the right to abstract water that is transferring. You hear about it all the time. It almost sounds as though you are just moving the water around, but you are not. Often these allocations are over and above the amount of water that is going past their door, and they cannot even turn on the pump because the foot valve is in the air. So, they can sell it to somebody else further downstream or in another catchment where there is some water and the system is still under stressed. We must make sure that message is right. I agree with your suggestion that we should reduce these allocations before we allow them to open up the market.

I want to tell you a story. I will not do it in the individual because it is not fair. In the cooperative research centre we have parties all around the country and we have associate members. When new parties come on the scheme, we give them a presentation about what we are doing and how they can access the information and knowledge skills of the system. Talking to the board of a water authority in another state about some of these matters over lunch, one of the board members was a local irrigator. He told me that the rumour going around that, when this process came in, everybody might be back like you suggested. However, it was not just 10 per cent but quite large cuts because of the fact that they all full well that the allocations were too generous already. There was a chance to bid for what you really needed. So he upped his bid quite substantially and then was absolutely shocked to find that the system gave him what he asked for. He did not have the capacity to pump that sort of water on his property and, if he did, he would have up to his knees in water (and they were his words).

He can now sell that water, and this is the reason why, under the new economic measures that have been put in place, the total abstractions across the basin have risen markedly. That means less water going out, which is why the mouth is closing over. I know we have a bit of a drought at present, but we would probably achieve it anyway, even in a higher rainfall season.

HON. MIKE ELLIOTT (South Australia): I would like to thank all our speakers. I present to you two South Australian wines as a sign of our gratitude.

MS VICKI DUNNE (Australian Capital Territory): On behalf of the ACT delegation, I thank the organisers for a splendid conference. All the members of the ACT committee are new members, and to be able to go to a first meeting of this sort and find something so well organised and to the point, and to also indulge a personal passion—water policy—you would think that all your Christmases have come at once. I express my great thanks to Paul, the other members of the committee and the committee secretariat for a job well done. There is a forthcoming conference being held next Friday in Canberra on the possibilities of renewable energy and energy reductions. This is the beginning of an inquiry which we anticipate will take some time, but it will look at setting targets for renewable energy, and you will be able to keep track of what is happening in that by access to the ACT government web page, and there are some web addresses there.

This bottle of water was a present from the ACT water supplier. It is not here to tell Adelaide how to suck eggs but to inform all the people about what water is like at the top of the catchment, where the commonwealth has ensured that we have a legislatively protected pristine catchment, and this is what the people in the basin need to aspire to.

MR PAUL CAICA (South Australia): Thank you for that. I hope that you have all enjoyed the conference: the feedback we are getting is that it was enjoyable. It was very nerve-racking putting it together, particularly when there was not a great deal of time, and there are a few acknowledgments I would like to make. The conference would not have run as smoothly as it did without the input and efforts of the secretaries and research officers of both committees. To Keith, Knut, Paul and, of late, Heather Hill, thank you very much. When I said that I would like to put on such a conference it was agreed to by the committees, and I pay tribute to Mark Brindal, who was a major worker behind the scenes on the steering committee.

The main aim was to ensure that I didn't stink and Mark didn't stink and that, by doing that and running a good show, you guys wouldn't stink, either. I think that we have got away with doing that. I trust that everyone has picked up something from the conference. It is like the closing ceremony: I guess we fold up the flags of both our joint committees, put them in a case and reopen them next year in Perth. The one thing I would like to leave you with to consider, and it has only briefly been raised, is that it would be nice if next year we come out with a joint statement. I know that it is very difficult for us to be bound by any resolutions that might emanate from this conference, but a lot of things have been said here today and over the previous days.

We have been given a lot of advice, and it is up to us to work on those various bits of advice and make sure that between now and next year we actually make a difference. It might be that next year we look at the way in which we can join together in a statement, a communique or whatever the case may be, to give the road that we are travelling down, the responsibilities that we have, some purpose that links to the conferences that we have. I think I

have said enough over the past three days: I thank you for your attendance and look forward to seeing you next year in Perth or, hopefully, before that, and I will now hand over to Lyn.

MS LYN BREUER (South Australia): Thank you, Paul. First, I want to make some comments. You talked about delegates stinking. I do apologise if you can smell a smell in this chamber, which I certainly can and have for the past three years. I know we are accused of being on the nose here, but I thought it had got a bit rich by the end of today. I don't know what the cause of the smell is. I have spoken to the attendants and asked them, but there seems to be some problem. I believe they have done a head count of MPs, because we have been in recess. They did check the offices to make sure that no-one had been lost in the process. We certainly need to look at that before we come back to sit in a couple of weeks' time.

I would like to offer my thanks and reinforce Paul's thanks to the two secretaries, to Keith and to Knut, who put an incredible amount of work into this. Paul and I had a meeting last Thursday with them and Heather to look at the arrangements. The consensus at the end of the meeting was that we did not really need to have that meeting because they had done such an excellent job of organising it. The way things have flowed in the past three days, that has been the case. I as an MP have learned how important these staff are. I did not have this luxury before I became chair of the committee but, all of a sudden, I've realised that this a pretty good job because you don't actually have to do much. You just leave it up to them and then you can take the credit!

In this case, however, I am not going to. I am going to pass on the credit to them for the excellent work that they did in putting all this together. We also need to thank Mark Brindal. As the former minister he contributed the names of quite a number of speakers, which accounts for many of the excellent speakers we have heard in the past three days. I would like also to thank our three chairs for the last three days. On the first day, Vini Ciccarello did an excellent job of looking after us, looking after the speakers and making sure that things went smoothly. Secondly, to Ivan Venning yesterday. I am sorry I was not here yesterday, but I believe he did an excellent job. And it is the beard, of course, that makes the difference! You look so distinguished.

MR IVAN VENNING (South Australia): And it doesn't take any water!

MS LYN BREUER (South Australia): I would like to thank Mike Elliott for his efforts in making sure everything ran smoothly today. I hope that you have enjoyed yourselves. If you got as much out of it as I did, you will go away particularly refreshed and challenged by a couple of our speakers today. Certainly, in this last forum we were challenged as MPs to do something about it, forget the hype and get on with the job. That is important for us in the future, because it is an issue that will affect us. People in 20 years' time will not remember us as individuals but will remember the monumental stuff-ups we have made if we do not do something about our water system.

We look forward to next year's conference. I am slightly disappointed it was not New Zealand, but there is the year after. It is still three years before the next election, so I am sure that we will get there eventually. However, I would love to go to the Pilbara region next year, if that is possible. I think we will all be really looking forward to Western Australia and what you can show us there. I am a bit sorry that it is over. We have met a lot of very interesting people in the past three days. One of the great things about these conferences is the networking you do, as much as anything else. You listen to some good speakers and come up with some great ideas, but you also get the opportunity to meet people in similar situations.

For us as MPs, that is particularly important, where we are on the social scale. It is important to know that there are other people who think like you do, so it is important for us to meet and mix with other MPs. Thank you once again to everyone for attending: do join us afterwards for refreshments. I now officially declare the conference closed for this year.

[Conference concluded]