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Official Committee Hansard

**HOUSE OF
REPRESENTATIVES**

STANDING COMMITTEE ON AGRICULTURE, FISHERIES AND
FORESTRY

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

WEDNESDAY, 11 DECEMBER 2002

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HOUSE OF REPRESENTATIVES
STANDING COMMITTEE ON AGRICULTURE, FISHERIES AND FORESTRY
Wednesday, 11 December 2002

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

Members in attendance: Mr Adams, Mrs Elson, Mr Forrest, Ms Ley, Mr Schultz, Mr Secker and Mr Windsor

Terms of reference for the inquiry:

To inquire into and report on:

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

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

WITNESSES

CAMPBELL, Mr Colin Andrew, Executive Director, Land and Water Australia21

Committee met at 5.15 p.m.**CAMPBELL, Mr Colin Andrew, Executive Director, Land and Water Australia**

CHAIR—Welcome. I declare open this public hearing of the inquiry by the House of Representatives Standing Committee on Agriculture, Fisheries and Forestry into future water supplies for Australia's rural industries and communities. This hearing is the second in the inquiry. Although the committee does not require you to give evidence under oath, I should advise you that these hearings are formal proceedings of the federal parliament. Consequently, they warrant the same respect as proceedings of the House itself. It is customary to remind witnesses before they provide testimony that the giving of false or misleading evidence is a serious matter and may be regarded as contempt of parliament. Would you like to make a brief statement in relation to your submission? Questions will be asked of you later.

Mr Campbell—My remarks with respect to the submission will be very brief. The submission sought to point out that Australia has some very solid national research programs, some managed by Land and Water Australia and others managed elsewhere, that are generating and will continue to generate very useful information to inform both policy and on-ground management of our scarce water resources. Our submission focuses on the terms of reference regarding the impacts of climate variability now and climate change in the future on Australia's water supplies and also the work we are doing to improve the management of the water we have, both in irrigation and dryland environments.

I am happy to contribute further detail on those R&D programs, but the submission sought to point out to the committee that this is not exactly a greenfield site. There is some very good world-class science occurring, particularly with respect to climate variability. Australia has the most variable climate on earth—as we are all pretty conscious of at the moment—and managing that variability means that our farmers have to be much better than those internationally just to break even. Our irrigation dams have to be four times larger than those overseas to give a comparable security of supply. In effect, the tools that we are developing to manage climate variability will stand us in very good stead in handling climate change, because the annual variation of our climate is much greater than the projected long-term trends in background change. So other countries are going to have to get used to the degree of climate variability that Australia has been coming to grips with for as long as we have been here.

CHAIR—Thank you—is that all you wish to contribute at the moment?

Mr Campbell—I would also point out that, on the water management side, we have leading national research programs in irrigation, river management and restoration and, importantly, in social and institutional dimensions of natural resource management. Issues such as property rights, incentives and the efficacy of different incentive regimes are things that we are also actively investing in.

I should make clear to the committee that Land and Water Australia does not actually do any research. We are like MLA or the Grains Research and Development Corporation. We are an R&D corporation that invests in, manages and coordinates research, but we buy it from CSIRO and universities—wherever we find the best science. So we are disinterested in who does the research or the methodologies they use. We are just trying to get the best value for taxpayer and industry resources. We like to work as much as possible in partnership with industry in

delivering those programs because we believe that, for research to be any good, it has to be adopted, and that requires good linkages with the end users of the R&D.

CHAIR—Excellent. No doubt the members would like to ask you a series of questions. We are all pretty keen. We have read your submission through. I have a dozen questions here but I will let the other members go before me.

Mr Campbell—I will respond as best I can.

CHAIR—Thank you. If you cannot respond now, you can send the answers back to us later.

Mr Campbell—In some cases it may be the relevant researchers who need to respond, but I am happy to organise that for the committee. I would also be quite happy to organise a field visit to any of the areas that you might be interested in following up. Some of the science that we are investing in this area is world class and we have a terrific base to build from.

CHAIR—Thank you. Mr Secker will begin.

Mr SECKER—I am interested in your submission where you talk about Australian Rainman as one of the flagship products. I have not heard of it, but then I probably do not read as much as I used to when I was a farmer. Can you give us some idea of what that actually means? How does putting your records in there actually help you analyse what might happen?

Mr Campbell—Using Australian Rainman—and a lot of farmers are—you can log on or use the CD-ROM, identify where you live and then see all the climate records going back as far as we have them for that area; they are there in great detail. You can then use that in making various decisions. For example, if you are thinking of putting in a summer crop then you want to know how much stored moisture there is, how much rainfall you have had in the growing season and how that compares over a long period of time. We have it linked to another package called Streamflow, which actually has the historical stream flow data for 100 years for 400 streams across Australia and which actually links rainfall and the southern oscillation index to stream flow. So, if you are an irrigator, you can get a pretty good feel for whether or not you are likely to get your allocation in the future.

Farmers are using it to give them localised, finetuned, detailed information to inform decisions like stocking rates, when to sell, when not to sell and whether to trade water or not. One sugar farmer that we were talking to said that he made a decision last year. He did not know whether to buy a tractor or an irrigator. Using Rainman, he could see that he had a 60 per cent chance of getting greater than average rainfall and so he bought the tractor not the irrigator. For him, a 60 per cent probability was good enough to make that decision. That is the sort of thing people are using that package for.

The resolution of that sort of science is getting better all the time. As we get to understand the linkages between the southern oscillation and management decisions, it will get ever more precise. There is some work now on sea surface temperatures that looks like giving us greater advance notice than we get from the SOI, with a greater degree of precision. If that fulfils its promise, farmers could have six to nine months more advance warning than they currently do to inform those management decisions.

CHAIR—I notice in your submission that you said that 40 per cent of farmers use the Rainman system for their forecast. What education program do you have to let the other 60 per cent know that it is there? I have to be honest and say that I have not heard of anyone using it.

Mr SECKER—What does it cost, by the way?

Mr Campbell—At the risk of putting something incorrect in the *Hansard*, I can say it is certainly less than \$20.

Mr SECKER—That is cheap.

Mr Campbell—It is just a CD-ROM. You put it in your computer, you plug in your area and away you go. For most of the work that we fund, the publications are free. But with a kit like a CD-ROM, we at least get the postage back. Sorry, that was not about your question.

CHAIR—I was wondering how you informed farmers that it is there.

Mr Campbell—That is the continual dilemma for us, because we are funded to fund the R&D, but we also want to see it adopted. So we always have a balancing act between the amount of money we invest in the R&D itself and how much we invest in promoting the outputs.

CHAIR—So who is responsible for the promotion? I was wondering why you would come up with a system like this if the farmers were not aware of it.

Mr Campbell—Ostensibly, extension services would be responsible for the marketing of that sort of work. It is fair to say that the efficacy of that is patchy. Queensland—your state, Chair—has an excellent climate application centre at Toowoomba, which does terrific work. The uptake in the sugar industry and the cotton industry, for example, is very high, much higher than 40 per cent. But in other sectors it is much lower, particularly in southern Australia. To some degree that reflects perceptions about the accuracy of the science—well, not so much the accuracy of the science but the extent of correlation between the SOI and the weather. In southern Australia people perceive that the relationship is not as solid as it certainly is in Queensland. We think that is wrong and that the story just has not been told well enough. To some degree, that is our fault for investing most of the money in the R&D instead of getting the word out. But we publicise it through the Web and we publicise it through newsletters that go out to all the industries.

CHAIR—Are the states aware of it?

Mr Campbell—Yes. Most states now are investing more in this sort of work. Five R&D corps have contributed to the program. It is going out to all the levy payers in the grain, sugar, cotton and dairy industries.

Mr SECKER—This committee has already had evidence that the creation of tradable water licences could create water barons. What is your view on that? The view was put to the committee in Tasmania that the hydro-electric scheme is a water baron down there. What is your view on whether it will create them? Is there a way of ensuring that that does not happen?

Mr Campbell—I am unaware of the situation with the Hydro. I would prefer to leave that one alone. Certainly, the rules surrounding a trading regime in water will be quite important. I know that some irrigation districts allow trading within the district but do not allow it outside. That is one way of preventing a district having all its water go somewhere else and preventing the concentration of water resources in some hands. A lot will depend on the way in which those trading rules are configured. There are some physical limitations on the extent to which water can be traded from one end of the basin to another. But the freer the market is, the more potential there is for resources to concentrate—

Mr SECKER—In smaller numbers of hands.

Mr Campbell—Yes.

Mr SCHULTZ—Cubbie Station, in Queensland, is a large cotton farm. Recently, the *Sydney Morning Herald* reported that the operators of Cubbie Station pay \$3,700 per annum for water licences to irrigate 14,000 hectares of cotton. The station is owned by a trust of seven growers and can store up to half a million megalitres of water, which is more water than Sydney Harbour. A megalitre of water sells for between \$1,000 and \$1,500 per megalitre in southern Queensland, which would give an indicative value of the Cubbie storage of between \$500 million and \$750 million. Newspaper reports have claimed that Cubbie Station has seriously affected the Narran Lakes in northern New South Wales, as well as land-holders downstream of Cubbie Station in Queensland and New South Wales. A press release from the World Wildlife Fund has disputed whether Cubbie Station has affected the Narran Lakes. I have three questions. First, do large agribusinesses that own substantial water entitlements such as Cubbie Station pose particular policy challenges? Second, can you explain why a large agribusiness such as Cubbie Station should pay so little for its water licences? Third, from a policy point of view, how should large agribusinesses that own substantial water entitlements be dealt with?

Mr Campbell—I am not sure that all those questions are R&D questions, Mr Schultz. The short answer to the first question is yes, there are particular policy challenges around large entities. There are also particular opportunities. I do not think it is axiomatic that a small family farm equals good water management and a large corporate entity equals bad water management.

Mr ADAMS—There is no research to that effect, is there?

Mr Campbell—No, I think you could argue potentially to the contrary. I know of one very large irrigator who has a full-time irrigation manager whose performance bonus is related to the water use efficiency achieved by the enterprise, and their water use efficiency is way better than industry average. Certainly it is a particular policy challenge because of the issue of potential concentration of resources, but I do not think it is necessarily bad for water management on the whole. The degree of professionalism and the degree of investment in long-term sustainability that those sorts of enterprises can afford puts them in a better position in the long run. The policy framework needs to be cognisant of them but I do not think it should see them as necessarily any better or worse than other water users.

Mr SCHULTZ—On the question of R&D, would you expand on your claim in your submission that the absence of a national framework for research and development in climate prediction will lead to issues being neglected or proceeding with a narrow focus?

Mr Campbell—We have been running, since about 1993, a national program called Climate Variability in Agriculture. The important thing about that program is that it brought together two bodies of science that hitherto were not well connected—oceanography and climate science—and it focused their relevance on agriculture. There is excellent work going on in oceanography and excellent work going on in climate science but no-one is asking the questions: what does this mean for agriculture? What does this mean for people trying to farm in a highly variable climate? How can we take this excellent modelling work and turn it into a better forecasting tool for farmers? So the point that we are making is that, unless you have a national means of coordinating the science, an issue like agriculture could fall through the cracks. We could be doing terrific work about predicting the future climate without turning that into tools like AussieGrass, Rainman or Streamflow. Someone sitting at home can ask: ‘What does it mean for the mid-Lachlan if in October or November you have an SOI of minus 10? What does that mean for my potential irrigation allocation?’ Those are the sorts of questions that we want to be able to answer with ever greater precision so that we can have better risk management. But unless you have some national coordination of the science to ensure that the sorts of modelling that are being done and the corporate data that is being collected and monitored actually translate down into operational tools like that, you run the risk of doing some fantastic science that does not hit the ground. So that is the point that we are making.

CSIRO do some fantastic work in atmospheric research, the Bureau of Meteorology do some fantastic work and the oceanography people do some great work. But their core business is not necessarily agricultural applications, and we need to ensure that we have a demand side coming into that science that is focused on the need for the management of our natural resources. Most degradation in Australia occurs during climatic extremes. We are potentially headed right now into the ninth major degradation event in recorded Australian history with the current big dry. The dust storms that we have seen to date are forward scouts for that, and the algal blooms that have not come yet but are more likely with every month will emphasise that further.

Mr ADAMS—An international review covered social and economic policy and institutional dilemmas as well as the core biophysical science. Do you know that review?

Mr Campbell—No, you will have to remind me.

Mr ADAMS—Land and Water Australia recently completed an extensive review of environmental water allocation in terms of scientific progress.

Mr Campbell—Yes.

Mr ADAMS—I am interested in when environmental science does not relate to the social or economic situation. Could you comment on that.

Mr Campbell—It was a very illuminating review. It has not gone to the printer’s yet, so it is not even hot off the press. It is a very up-to-date review of all the science being done on environmental flows around the world. The outcome was quite salutary in many ways, because we found lots of examples of work being done to model environmental flow requirements but very little work where people had actually put more water down a river and evaluated the results. So there were a lot of people talking about it, and a lot of people modelling it and conceptualising how you would do it, but very few examples where countries or jurisdictions had allocated more water for the environment and then seriously and rigorously monitored the

results. That is not just the environmental results—waterbird breeding events, fish breeding events, flushing of wetlands and whatever—but the social and economic impacts of those.

I will not say we were surprised, but we were not heartened, because we did not get a lot of practical work that we could build on. It was depressing to find that Australia is right at the forefront of this area because we would like to be doing more, but our science is as good as the science anywhere else on this question. That is the direction we need to go: towards much better methods for evaluating the impacts of water we allocate for the environment and for putting really good numbers on those. We demand that our farmers improve the water they are allocated; environmental water managers need to be under exactly the same scrutiny to prove that the allocations for the environment have delivered. We need really good methodologies to do that and we are designing our R&D program to deliver that right now, which will comprehend the social and economic dimensions as well as the environmental impact.

Mr ADAMS—Understanding ENSO and fathoming the patterns of the oceans is the key to unlocking the vagaries of our unique stop-start environment. You commented that Australia's climate is the most variable in the world, which is a big statement. What is meant by the term 'unique stop-start environment'?

Mr Campbell—There is a lot packed into that phrase. The natural, pre European settlement Australian environment was stop-start in a way. For example, kangaroos suspend ovulation not based on the amount of feed available but based on the amount of water available. So when it got dry kangaroo numbers dropped dramatically. They did not drop because there was not much grass around; they dropped because of lack of water. So things stopped, but the moment it rained the cycle kicked in again. It is being flush and then being able to hit the pause button, if you like. Yet we have constructed farming systems you cannot turn on and off as quickly. We have tried to even it out through measures like irrigation, storing fodder and providing permanent fresh water. That works in the majority of seasons, but it does not work all the time. So one direction to move in is to change our farming systems so that they can make a lot more money in the good seasons and wind back to a maintenance operation in the crook seasons. Some of our better operators are already doing that. But, for someone just starting out in agriculture—who has borrowed a lot of money and has a high debt level—it is a big ask to expect them to operate with no income for 12, 18 or 24 months.

Mr ADAMS—These are the native seeds that do not flower every year; only when there is enough moisture in the soil.

Mr Campbell—Yes. It is incredibly opportunistic and incredibly parsimonious when the resources are not around.

Mr WINDSOR—I have a follow-on question. We met with the CSIRO a few weeks back. They had some you-beaut modelling in terms of climate and what that would do to river flows et cetera, but they had nothing in terms of what the flow systems were like before white men arrived—or even 100 years ago. Can Rainman or Streamflow be used to look backwards? One of the things we are asked to look at in terms of the environmental flows is what we are looking at in terms of history. I know we cannot recreate what was here, but what sorts of flows were we looking at? I think it relates to this stop-start. The rivers were stopping and starting as well, and the kangaroos were stopping and starting. In the environmental argument we are trying to create something that uses regulated systems to make something that does not stop-start.

Mr Campbell—I do not know if you have seen that famous old photo of the character standing astride the River Murray.

Mr ADAMS—It might be a good photo for us to see, actually.

Mr Campbell—Yes. The Murray-Darling Basin Commission has it. It was not uncommon in February or March or April—

Mr SECKER—Over 100 years ago you could walk across the river at the Berri Hotel. You did not need the bridge we need there now.

Mr Campbell—That is right. I will take your question on notice, Mr Windsor, because I think that is an excellent question. I suspect that the earliest records that are in Streamflow were probably collected by the first engineers after they had put their structures in place or at the time they were putting their structures in place. I am not sure how much ‘before’ data we have, because the earliest stream gauging stations were all done by water supply departments and the data was predominantly collected by engineers, usually with the water going over a weir. But that is only a suspicion. I would need to go back and check for you, which I will do. It is a very interesting question.

Mr WINDSOR—That is fine. Further to that, is it possible for your department to get in touch with CSIRO and see if their model can be used to go backwards rather than forwards? They were saying to us that they could model out for 100 years. If they can do that, they should be able to model back for 100 years to show the impact on trees and grasses in some of the areas that run water now that would not have run water back in those days.

Mr Campbell—Indeed, and I think it is a critical point: that we need environmental dries as well as environmental flows. One of the tricky things is that the time when the irrigators most want water in the rivers might be a time when, under natural conditions, there would not be much of a flow at all. We are using wetlands to store water at times of the year when naturally they would have been quite dry. That is one of the really tricky things for us to manage.

CHAIR—Just to let you know: we have got divisions in the House in another 10 minutes. We will close the inquiry before that so that we do not hold you up for another half an hour, and I know the committee members are committed after six o’clock. We have 10 minutes at the most, I would say.

Mr Campbell—That is fine.

CHAIR—Mr Forrest?

Mr FORREST—Thanks for the submission. I am impressed with the corporation’s mission to ‘provide national leadership in generating knowledge, informing debate and inspiring innovation’.

CHAIR—The division has come a little earlier than expected so we will have to leave now. If you want to wait around, some members may come back and ask you questions.

Mr FORREST—I want to get in my cloud seeding question. I will be back.

CHAIR—We will come back to close the meeting anyway. If you want to stay that would be good. Thank you very much. We will be back as soon as we can.

Proceedings suspended from 5.49 p.m. to 6.01 p.m.

Mr FORREST—Your submission talks a lot about climate variability and so forth, but you skirt around the really tricky subject of weather modification. The committee would like to get to the bottom of the conflicting evidence we receive with regard to that question. We know and are advised that programs work effectively in Texas in the United States and that a huge amount of money has been invested. We know it is being used in Israel and that it is used in southern Africa. They are all regions of similar topography and climate to the arid part of Australia and yet, other than Tasmania, this does not seem to have mainstream respect. Is your corporation investigating this question or is it like everybody else who gave up because we did not do it right in the seventies?

Mr Campbell—I will have to take that on notice. I am unaware of any work that we have ever done on it. The R&D corps were set up in the late eighties, so we would not have been involved in the work in the seventies you referred to. I will take that on notice and check with some of the leading climate researchers as to whether they are planning to or have done any work in that area. I do not see why it should be ruled out as a priority area of investigation, but I think the critical thing for Australia is to learn to live with the climate we have and to put the bulk of our effort into that rather than into trying to make the climate do what we want it to do.

Mr FORREST—The Tasmanians would not agree with that. In your opening remarks I think you said you rely on the CSIRO for expert advice. Do you draw advice, particularly on that, from other places?

Mr Campbell—We generally commission research through contestable processes on everything but the smallest projects. The CSIRO is, if you consider it one organisation, the single biggest recipient of our funding, but state agencies, universities and private firms are also very significant recipients of our funding. We generally run a tender process and we pick the best deliverer against the brief that we are advertising. I think that is a very good way to run science.

Mr FORREST—I am glad you are prepared to take the issue on notice, and we would look forward to a submission on that. We would be particularly interested in your opinion as to whether, based on what is being done around the world internationally with success, that is a worthy avenue of reconsideration for Australia. We would like your opinion on that.

Mr Campbell—My personal opinion is that we should have a look at it. We should at least review the science that is happening elsewhere in the world and the results that they have achieved and the extent to which it is relevant to Australia. We are embarking on a new phase of our climate program, so there is scope to put that on the table early on.

Mr FORREST—I would also like to pursue the question of the use of the excellent work that CSIRO do. Mr Winters made reference to the modelling, which is used more for forecasting. I have had discussions with the CSIRO about using it in hindsight. My view is that the hydrological cycle in inland Australia has become progressively, I will use the word

'constipated' because I cannot find a better word. It is self-fulfilling. The less rainfall we get the worse it gets in reduced evapotranspiration. The system of inland terminal lakes is no longer full and we have not had major floods in our river system, particularly in the Murray-Darling. I would like to see the results of that model run in hindsight, because the boundary conditions can be modified with the lakes full—for example, when Lake Eyre was full, or the 1956 flood in the Murray and a wet catchment—to see the way the hydrological cycle operates. But the CSIRO is reluctant to do that. The response is: 'That is fine, but it takes us away from core research and someone has to pay.' I would like your opinion on the hypothesis I put about the hydrological cycle.

Mr Campbell—Again I think it comes back to the climate question. There is an interesting area of work in the climate program on decadal variability. It is pretty clear that the nineties were a dry decade. So we have wetting phases and drying phases that occur over decades rather than seasons and we are starting to understand that long-run pattern. It is very clear that the south-west of Western Australia has been in a 20-year dry phase. I often wonder—with the average rainfall figures for some regions or the figure that farmers say is their average rainfall—whether those averages were originally worked out during relatively wet decades and almost every year since seems to have been dry. I think that long-run climatic pattern is very important to understand, but equally we have substantially modified the microclimate in a lot of regions and greatly increased the amount of loss through evapotranspiration, so your other thesis is also plausible. I cannot speak for why the CSIRO did not want to run their model with some of the boundary parameters set as you have suggested. I would need to follow that up with them.

Mr FORREST—Again, I would be interested in your opinion as to whether that is a worthy avenue of research. My hypothesis is that it would reveal a lot about how we have changed the river regime and the way that lake systems operate substantially, because there are lots of them out there in inland Australia and they are bone dry, certainly in the part of the world that I come from. We have not had water in Lake Albacutya since 1975.

Mr Campbell—We have certainly built a lot of structures over the last 150 years or so, both small-scale farm dams and structures in rivers. I think for the basin we built storage capacity that exceeds the total annual flow, so our capacity to hold the water that does fall is quite extraordinary. We have modified the catchments themselves with our land use practices, so I think your thesis is quite plausible. I think constipated is not a bad term certainly for our surface water hydrology.

Mr FORREST—With your Greening Australia hat on, to me it is part of resolving your former argument.

Mr Campbell—I was not aware I had a Greening Australia hat.

Mr FORREST—There is this great argument today about environmental flows. There are those who argue we should be trading our water for commercial use, but I put forward a very strong hypothesis that environmental flow has a function. In terms of restoring conventional hydrological cycles, some research in that area could provide powerful data to solve the argument about environmental water. It is a commercial reality to have rivers flowing the way they should. If you cannot answer the question now, that is the kind of research that I want to see.

Mr Campbell—I will certainly take it on notice. We are developing new programs in both environmental water allocation and climate. It is the linkage between the two that is really interesting.

CHAIR—I am very sorry about this. John has been a gentleman and is going to hold off his next question while Susan asks one because she has to go to a meeting.

Ms LEY—I would not normally go but I have some dairy farmers' wives coming to tell me about the sad lack of water and the effect it is having on their livelihoods. I have to be very kind to my constituents. It was important for me to come and very interesting to listen to what has been said so far. I also want to talk about environmental flows because, in the first part of your submission, you say:

Land & Water Australia has also recently completed an extensive review of environmental water allocation, both in terms of scientific progress and experiences with implementation.

I wonder how you have tested the rigour of the science that currently exists. Later on in the paragraph, you say:

The review also highlighted the need to develop robust methods to assess the benefits of environmental water allocations if industries and communities are to make the hard decisions ...

At the moment the Murray is receiving an enormous environmental flood. Between Dartmouth Dam and South Australia, it is flooding in several areas. In fact, the red gum forest at Barmah, which in a natural environment would receive a flood once every five years, has been flooded three times this year and the trees are in danger of dying. That is because we are sending huge amounts of water down to South Australia. I am not arguing about the logistics of that.

Mr Campbell—I think you could argue about whether that is an environmental flow.

Ms LEY—So maybe that is not an environmental flow. But generally, with environmental flows, do you feel comfortable with the science that exists?

Mr Campbell—No, in short.

Ms LEY—What can we do about it?

Mr Campbell—We have found it to be quite lacking on practical measurement of what has happened on the ground. As I said, it is strong on modelling, conceptual frameworks, prediction and so on. However, there is not enough solid work on going out and measuring what has actually happened when extra water has been put down the river for environmental purposes. All around the world, the methodologies for doing that are thin and there is not much evidence in the literature. There was a world conference on it in Johannesburg only a few months ago which Australia attended. No-one talked about the work they are doing. The work in the Murray-Darling Basin is as advanced as anywhere else, which was quite sobering for us to realise. We went there expecting to learn from other experiences and could not find anything practical to go on. Everyone else was still in the realm of theory and modelling.

Ms LEY—Is it that scientists are saying, ‘We have not had enough time to measure impact and, because it is an environmental issue, impacts cannot be measured immediately’? Or is it that there does not seem to be the will or the methodology to measure?

Mr Campbell—It is a fact that there are not too many areas around the world where communities and governments are actually doing it. Secondly, there are the methodologies. What measurement techniques do you use? How robust are they? Have they been peer reviewed? That science is pretty thin as well. The Cooperative Research Centre for Fresh Water Ecology is set up.

Ms LEY—In Albury and Mildura.

Mr Campbell—Probably the best environmental flows experiment in the world was on the Campaspe, downstream of Lake Eppalock, but they had to abandon the experiment after eight or nine years because they had never had a flow. It had the most brilliant before data and no after data because the dam never had enough water in it to let any go. The only thing wrong with that little experiment was that they chose the wrong decade in which to run it. We have been a bit unlucky in that regard, otherwise, we would have had the world’s best experiment—large scale, instrumented and measuring real changes on the ground and in the river. But we do need to do more of that.

Just as an addendum to Ms Ley’s question, if you are talking to your dairy farmers, the critical issue there is the variation in water use efficiency within particular industries and districts. In dairy, the more efficient water users are generally using about one-third the amount of water, for the same amount of butterfat, that the less efficient users use.

CHAIR—Is your department informing all dairy farmers about how to use water more efficiently?

Mr Campbell—We are trying to through a partnership with the Dairy R&D Corporation, but the response of the dairy farmers is generally that, at the moment, water is still a small proportion of their input costs.

Ms LEY—Not at the moment it isn’t!

Mr Campbell—We have been banging this drum for quite a while without getting a great response.

CHAIR—Do you think more needs to be done in that area, as far as education is concerned?

Mr Campbell—If you look at what rice has achieved, they have dramatically narrowed the gap between average practice and the best and the worst practice, and cotton has similarly made big strides. But the irrigation of pastures has huge variations between the more and the less efficient operators, and that is where the big gains are to be got.

CHAIR—It does seem a shame, though, when all of this research and development gets done and we do not then use the results of that to educate and to take it that one step further—

Mr Campbell—We are trying to, but at the end of the day it is voluntary as to whether people will pick it up or not. The leading producers do and are very active users of the R&D.

CHAIR—Do you think it gets through to all the farmers though? I know that when we were doing the dairy deregulation all of that did not get through, because some groups hand through information and some do not.

Mr Campbell—I actually think the Dairy R&D Corporation do an excellent job in promoting their work, and they have a direct levy paying relationship with all of those producers. So I think our R&D corporation model is the best in the world in terms of combining industry resources and taxpayer resources focussed on adoption, but it is a real challenge for all of us to get the balance right between the amount of money we spend on doing the science and the amount of money we spend on promoting it. When the corporations were set up, the assumption was that there were viable extension services there to pick up the science and get that out to the farmers. That is the case now for commercial R&D that will make people more money—the consultants and the equipment suppliers and so on will pick it up. But for some of this work that has more of an environmental focus, extension services are, as I said, much more patchy. It is quite frustrating for us as R&D investors to see what we think is terrific stuff that people have not heard about.

Mr FORREST—I might be interested to talk to Mr Campbell again about this.

Mr Campbell—I am quite happy to do that.

Mr FORREST—You are based here in Canberra, aren't you?

Mr Campbell—Yes.

Mr FORREST—There was one side issue that you mentioned. I have made this observation in the last 12 months: the migration of emus is staggering. There is an incredible number of emus in my part of the world, in Victoria. You mentioned that kangaroos are able to adjust their cycle. Is that not the case with emus? Are they actually on the move? Have you got any comment on that? The number of road kills of emus in my part of the world is staggering. It is a problem in the drought because they are hopping into the wheat crop too.

Mr Campbell—I am aware of the problem but I am not an authority on the biology of the emu. I am not aware that they have a similar mechanism to the macropods but I am happy to chase that up for you. They are certainly very good at going in search of water and feed, and that does create a problem in the northern part of your electorate. But I simply do not know whether they have that—

Mr FORREST—I do not think it is all that relevant to our inquiry. It is just something that I have a personal interest in.

Mr Campbell—It is something I am curious to chase up because I am sure that they do have some mechanism for regulating their population in response to the conditions, but I am just not sure exactly what it is.

Mr WINDSOR—I have another budget type question. In terms of ground water systems, are you able to let us know—I do not expect you to let us know now—the quantities of water in ground water systems in the Murray-Darling system, for instance, that are not only overallocated but overused.

Mr Campbell—I understand that you have had a submission or are getting one from Colin Creighton from the National Land and Water Resources Audit. They have data on exactly that. The audit water resources report looked basin by basin at ground water allocations against an assessment of the sustainable yield of each ground water basin. A very significant proportion of ground water within the Murray-Darling Basin is overallocated, according to that report. I cannot remember the exact numbers.

Mr WINDSOR—I think there is a distinction between an overallocation of a resource and an overuse of a resource.

Mr Campbell—Indeed.

Mr WINDSOR—You make the point in your submission that in some areas—the Lachlan and the northern Murray or somewhere; I cannot remember—under some of the modelling that you or someone has done there can be an increase in water use in those systems.

Mr Campbell—That is right.

Mr WINDSOR—But what we need to know is just where the systems are that are under stress now in terms of overuse.

Mr Campbell—The audit report does set that out with maps in some considerable detail, so I can provide those for you. But I am sure Colin Creighton or the new executive director of the audit—I am not sure you will be speaking to—will be able to furnish you with that report.

CHAIR—Thank you very much. I had another 10 questions I wanted to ask you but no doubt we can get back to you or we may call you back later on. I thank you very much for your time today. I appreciate it.

Mr Campbell—It was a pleasure.

Resolved (on motion by **Mr Abbott**):

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

Committee adjourned at 6.23 p.m.