COMMONWEALTH OF AUSTRALIA

Official Committee Hansard

HOUSE OF REPRESENTATIVES

STANDING COMMITTEE ON SCIENCE AND INNOVATION

Reference: Coordination of the science to combat the nation's salinity problem

MONDAY, 3 NOVEMBER 2003

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HOUSE OF REPRESENTATIVES

STANDING COMMITTEE ON SCIENCE AND INNOVATION

Monday, 3 November 2003

Members: Mr Nairn *(Chair)*, Ms Corcoran *(Deputy Chair)*, Mr Martyn Evans, Mr Forrest, Ms Grierson, Mr Hatton, Mr Lindsay, Mr Tony Smith, Mr Ticehurst and Dr Washer

Members in attendance: Ms Corcoran, Mr Martyn Evans, Mr Forrest, Mr Hatton, Mr Lindsay, Mr Nairn, Mr Ticehurst and Dr Washer

Terms of reference for the inquiry:

To inquire into and report on:

The Commonwealth's role in managing and coordinating the application of the best science in relation to Australia's salinity programs.

In conducting its inquiry, the Committee will give particular consideration to the:

a) use of salinity science base and research data (including the development of new scientific, technical and engineering knowledge) in the management, coordination and implementation of saliity programs;

b) linkages between those conducgting research and those implementing salinity solutions, including the coordination and dissemination fo research and data across jurisdictions and agencies, and to al relevant decision makers (including catchment management bodies and land holders); and

c) adequacy of technical and scientific support in applying salinity management options.

WITNESSES

CAMPBELL, Mr Andrew, Executive Director, Land & Water Australia 1

GOSS, Mr Kevin, Chair, National Dryland Salinity Program, Murray-Darling Basin Commission, ... 1

PRICE, Dr Richard, National Manager, National Dryland Salinity Program, Land & Water Australia 1

Committee met at 4.55 p.m.

CAMPBELL, Mr Andrew, Executive Director, Land & Water Australia

GOSS, Mr Kevin, Chair, National Dryland Salinity Program, Murray-Darling Basin Commission,

PRICE, Dr Richard, National Manager, National Dryland Salinity Program, Land & Water Australia

CHAIR—I declare open this fourth public hearing of the House of Representatives Standing Committee on Science and Innovation in its inquiry into the coordination of the science to combat the nation's salinity problem. On 13 August the committee was asked by the Minister for Science, Mr Peter McGauran, to inquire into this issue. This inquiry was advertised nationally and written submissions were sought from interested departments, organisations and individuals. Our focus is on managing and coordinating the application of the best science in relation to Australia's salinity programs. We have now received over 50 submissions to the inquiry. As I said, this is our fourth hearing. We held hearings last week in Sydney, Wagga Wagga and Shepparton, along with some inspections. I now call the representatives from the National Dryland Salinity Program. Welcome. In what capacity do you appear?

Mr Campbell—I am standing in for Bobbie Brazil, who is the Land and Water Australia board member on the National Dryland Salinity Program.

CHAIR—Although the committee does not require you to give evidence under oath, I should advise you that the hearing is a formal proceeding of the parliament. I remind you and all witnesses that the giving of false or misleading evidence is a serious matter and may be regarded as a contempt of parliament. I also remind you that the committee prefers all evidence to be given in public. However, at any stage you may request that your evidence be given in camera and the committee will then consider your request. We have your submission, which is submission No. 35, which has been authorised for publication, so it is on the record. Would you like to start off with some opening comments before questions?

Mr Goss—Firstly, I would like to say that we are very pleased to put in a submission. We think there is a terrific opportunity for the National Dryland Salinity Program to make its own statement about the way forward with salinity research and development nationally. We are particularly pleased to be invited this afternoon to speak to the submission. I would like to briefly speak to the four conclusions, and then I will invite my colleagues, Richard in particular, to make some comments in detail; but we will do that within the six minutes. We drew four conclusions within the submission, and there was a lot of supporting information.

Mr FORREST—Sorry to interrupt, but where are they?

Dr Price—There are four key points followed by six conclusions and then a further eight supporting points.

Mr Goss—It is the four points in the executive summary. The first one is the National Dryland Salinity Program's contribution itself. I do not intend to blow our trumpet, although I

think somebody should, but I think there is a real lesson to be drawn from the history of the National Dryland Salinity Program. That program has been through two five-year phases, each strategically planned in the national interest and drawing together partners on the basis of their shared interest in dryland salinity R&D across Australia. Those partners were quite varied over time, and the way the program flexed over time is very important. The partners were government instrumentalities but not entirely so. They were R&D corporations, the Murray-Darling Basin Commission and in latter times some commercial interests as well. So it was a very versatile program that was able to move with the times.

It did its two five-year plans on the basis of the issues of the day. If you track through the output of the program, what you see in the pattern of outputs is the way that the salinity issues moved on and the way that program responded to those issues. We have just been through a very elaborate evaluation of the program on the basis of its second five-year phase, and we really are now drawing the knowledge out of that and we are going for broke in making sure that knowledge is as freely available as possible, putting most of our energy into communication.

The second conclusion is more problematic and I would suggest to you much more challenging for consideration. There is no doubt that, as learning has been built around dryland salinity as time has gone on, we are now going into the debate phase. I am sure you have been exposed to this. There have been criticisms of which way the policy has gone when it comes to national dryland salinity management. Looking at that debate, the thing that is really common ground is the importance of R&D. Some of the critics have said, 'You are spending your money in the wrong places,' and so on. Peel away the criticism and you find that R&D for the long term is common ground for all the people involved, and clearly it is in our self-interest in this program.

Why are people coming back to R&D as common ground and talking in the long term? It is for two reasons. Firstly, there are clearly not commercial solutions generally applicable across those areas that are generating salt at the moment. Richard and Andrew can speak more about that, but that is clearly the case. There are some solutions, but in terms of universal coverage they are not there. Secondly, with some of the solutions we are now running into real trade-offs, and there is quite serious tension over those particular ones. I will give you two examples. The first one is plantation forestry and water yield. A Senate committee is pretty much focused on that at the moment, and I appeared before it last week. But the emerging information behind that allows you to get through that sort of issue. It is now a much better informed issue than it was one or two years ago.

The other one is land drainage, about which communities in Western Australia are bordering on civil war right now—you will catch up with this, and my own background is in that state—where clearly communities are at loggerheads with scientists, with governments, with engineers over such an issue. If you penetrate it again, you can inform it. You can inform this challenge of engineering solutions for something like dryland salinity and how you deal with it. In that case, whether it be engineering for land drainage in Western Australia, whether it be salt interception schemes in the Murray-Darling Basin, the principles are pretty much the same. Interestingly, the National Dryland Salinity Program spotted this fairly early. If your researchers went onto the web site for NDSP, they would find there virtually a decision support tool to take you through choice regarding engineering solutions and how you would apply that in a highly principled way. So, again, it is knowledge before the issue.

The third conclusion we made is simply about the findings themselves that have come out of this 10 years of investment by partners in NDSP. We have taken the opportunity to put before you those findings, so I will not go into them in detail, but there are some high-level key messages, as we call them. We really could not call them 'findings' because they are dilemmas thrown up even now. The six key messages that we drew out of the work, particularly in the last five years, include, we say, 'Salinity costs are significant and rising: Protection must be strategic'. Wherever you are across Australia, the nature of costs and benefits fall differently—and they fall very differently—whether it be in the water resource areas of, say, the Murray-Darling Basin or whether it be in dryland areas away from water resources where there are different sorts of impacts. A lot of work is being done on costs and benefits, but when we get to the regional scale response now then that has to be thought through.

Profitable options for reversing the trend is another key message. As I said earlier, that is clearly unfinished business. There is no one salinity problem. It is a diffuse source pollution problem which hits the ground in different parts across Australia. That diversity is clearly a challenge for us. A lot of attention has been given to integrated catchment management as the way forward, but that works in some parts but not in other parts of Australia. Vegetation management requires careful analysis now because of the water yield issue, and there is still this issue of lack of capacity. But, given these other imponderables, simply building the capacity of regions and Landcare groups and so on to deal with it is not in fact the total issue. I will invite Richard to speak to a couple of examples there, because I think it is worth working your way through that.

Finally, we are suggesting that there is something to be learnt from the NDSP experience. It is still highly relevant. It has been backed by Land and Water Australia and some other key industry based organisations for another year to really dredge through all that knowledge that has been accumulated and start to put it out in very different ways.

If I could just finish with a final point before I hand over to Richard: it is quite clear that, on the basis of our experience and our observations, if we look at the central importance of R&D for the long term and we look at how things are unfolding at the moment under, say, the national action plan, it does not give us confidence that R&D will be effectively handled over the next little while. It is in the nature of R&D, as I have described it, that there are critical mass issues. Some things you have to deal with nationally, some things you can deal with regionally and some things you have to take whole sectors of Australia to deal with; and that will be in the hands of various institutions and organisations. Our observation at the moment, and it is a preliminary observation, is that investing through the regions and then assuming that the regions have a capacity to drive the coordinated R&D agenda is aspirational. We do not see that the momentum is built yet for nationally coordinated R&D on the basis of that approach, and we think that is an important matter to discuss today.

With your agreement, I will ask Richard to speak to some of the key messages out of the program, because there are some interesting technical matters in that.

Dr Price—The six key messages that have come out of the National Dryland Salinity Program over the last 10 years may look fairly axiomatic. They may not look all that startling, but the implications of each are in fact enormous. Not only are they enormous for the coordination of R&D; they are also fairly significant for coordinating policy at the state, national

and even coming down into local levels. They are also enormous in terms of the funding, the resourcing, of the national effort on the ground to deal with salinity.

If I can just take a couple of examples going down the list: firstly, salinity costs are significant and rising; protection must be strategic. We have all seen the figures. We have all seen the headlines in the newspapers, the scaremongering that has been going on over the last three or four years about the size of the problem for Australia, that it is not just an agricultural problem but also a problem for our infrastructure, our roads, our townships, our livelihoods in rural Australia. If you were to determine all the cost benefits across the issues and across the regions, you would be left with a position of having to make a choice about what you cannot ameliorate, what you cannot fix. When we talk about 'protection must be strategic', we are essentially dealing with having to make choices about where it is that we should protect assets—identifying those assets and protecting them.

That is part of a triage approach: prevention versus where we have to go in and rehabilitate problems that have been identified as such and where the benefits do outweigh the costs. Also, we have to come to grips in this country with the fact that we are going to have to live with a lot of salinity in the future. Taking the present predictions of 2.5 million to five million hectares being at risk at the moment—20 million by the year 2050—we can be confident as a research fraternity that there may be anywhere between six and nine million hectares of land that we are going to have to learn to live with. The nature of the biophysical processes in salinity are such that once the pulse has left the heart, to use an analogy, there is no way you will stop it from getting to the wrist without some major surgical intervention. So, when we talk here about 'protection must be strategic', we as a country must be much more clever and use our science, economic and social skills to identify exactly what it is that we protect, that we rehabilitate and that we learn to live with. That is an enormous challenge before us.

Another example is the second issue: 'Profitable options for reversing the trend are lacking'. We have also seen plenty of good-news stories. My program, the National Dryland Salinity Program, puts out fairly regularly a newsletter and a magazine which concentrate on good-news stories. Good-news stories are important because there are good things that are happening. But the extent to which we can aggregate all those good-news stories to make a difference in dealing with salinity is unfortunately limited. We do not have the plant based solutions at the moment to be able to make the changes on farm in the scale that we need to. Lucerne, for example, is a deep-rooted perennial that more and more farmers are adopting at the moment into their systems. We know from the economic research we have done that in Western Australia you can take lucerne to about 20 per cent of a property and in other parts of Australia to about 15 per cent of a property, after which your economics start to decline: you have gone beyond optimisation. If you are dealing with only 15 to 20 per cent of your property in perennial vegetation—and lucerne is a goer compared to many other alternatives—that is not going to do much for controlling salinity either on farm or on a regional basis in many cases.

A CRC has been created to deal with plant based solutions at the moment, and the timing that it has stated for some of these solutions to come on board is anywhere between seven to 21 years. So we are looking down a long track. Remembering the figures that I told you earlier, that does mean that we are going to have to learn to live with salinity in many parts. But it also tells us that plant based solutions are not the only way to go. There are many other ways of dealing

with salinity. As the chairman mentioned earlier, engineering is one of those. But it is about how to be smart in putting those interventions into effect.

Mr Campbell—I have nothing to add, Mr Chairman.

CHAIR—Thank you for that. In the hearings we have had so far a lot of people have said they believe there ought to be some sort of federally controlled, for want of a better word, storage place for much of the information and knowledge developed on salinity so that there is somewhere to go to find out what has been done, what the alternatives are et cetera. At the moment people out there believe it is too hard to track down what has been done and where. It seems to me to be a fairly major task. At the state level, the New South Wales government has a web site called 'CANRI', which is designed, theoretically, for that, although we have found that certain New South Wales government departments did not even know it existed and certainly some of the associated organisations certainly did not. Others criticised it as being really just a way into technical journals and things, and there was no sort of capacity to explain at lay levels what was going on. Do you have some thoughts on that and whether there is something we ought to be looking at?

Mr Goss—I think I can forecast all three of us will. NDSP has really shown that that is the case, that you can build a network nationally—and I emphasise 'network' because it is beyond a repository; it is a network—and it is how that works, how it is accessed and how you keep it alive with people. So I just want to speak about that for a moment. The NDSP web site, which has some really interesting things in it, is a highly used web site. In that sense there is a track record in bringing stuff together and making it available. But I think the important thing about that experience is the way that you build a network of key people around it. We have had a thing called an operations committee. That means nothing to you, I know, but this operations committee, you will find if you read the evaluation reports of the NDSP, has turned out to be the engine room for national exchange of information and also almost quality assures that information. So we have been able to bring in partners—and, as I said, they are not from any one sector; they are across different sectors. They provide somebody to the program who is demonstrably a very experienced technical or scientific leader. Those people have stayed with this. Their relationship with the program has been one of technical quality assurance, very active exchange and very active debate. When we got to the point where we were evaluating the program months back, we went through the usual process of evaluation. Then we ran a technical seminar. We went back to people who have been involved over the previous five years, and even some earlier, and said, 'Come together again and let's put it on the table again,' and ran an incredibly lively exchange, which we have documented and we have made available.

I guess my answer to the question is that I generally agree with the proposition. I do not think it is simply about a depository of information and a one-stop shop in that sense that you go to in perhaps a reactive or highly responsive way. I think we have to get on the front foot and make sure that at this very senior technical level across Australia there is this very active and vibrant exchange.

I come back to my earlier point that, while we have a track record on that when it comes to key agencies across Australia, R&D corporations and people like the Westpac Bank and the Murray-Darling Basin Commission, we do not have that with the new players, particularly catchment management bodies or regional bodies in natural resource management. I think that is

a weakness now, and that is probably where a fair bit of the demand is coming from. But Richard and Andrew will have other perspectives on this, I am sure.

Dr Price—I will deal with this very quickly. I could talk for hours about this particular topic, but I think there are three issues here. One is the issue of capacity, particularly at the regional level, and the support they receive from the states. There is a high turnover in extension where extension exists in our departments of agriculture and natural resource management. Reward systems to keep people in Landcare coordination type jobs do not exist. The questions that you are raising here are tied in with a whole host of other questions about support to rural Australians, not just Australian agriculturalists.

I guess there is a secondary issue about the capacity to be able to interpret science. Often the last people whom I want interpreting science are scientists. I would rather see science interpreted by those who are close to the ground. There has been a gap between our science speakers and our science listeners, unfortunately. So there is definitely a capacity issue that does need to be addressed and potentially within a coordinated way. We are not just dealing with the coordination of R&D but talking about potentially coordination of information dissemination.

Secondly, much of the information that does wind its way to target audiences—to farmers, to people in the community, to local government shire engineers—tends to come from a single source. We tend to have a science based or agency based system where information is pushed out from the organisation that developed that information. So you do not get messages going forth that are either consistent with other messages that people are hearing or actually put into the context of the broader issues. I, and certainly Kevin, mentioned earlier that in some cases we are dealing with not one solution but a multitude of solutions. So, if we have a system where one scientist or one agency is pushing a message, it becomes problematic.

I think the third issue that needs to be thought through here is that some people may say that they are not getting information, but if you burrow down—I am a sociologist by training—and get to the underlying reasons for why they might be saying that, it may have nothing at all to do with lack of information that they are experiencing. It may be that it is not the kind of information that they want to hear or it is not the kind of information that they are prepared for, or to understand.

Also, as I mentioned earlier, in many cases we do not have the solutions to many problems. If a producer under a particular circumstance is looking for a very specific solution for a paddock and they know whether or not you are selling them a turkey and that you do not have a solution, then it is very easy to say, 'The information is not there.' So it may be a capacity problem, but it may also be that we do not have the answers.

Mr Campbell—When the National Dryland Salinity Program was first set up it probably did play such a role effectively of being a national go-to point to find out about salinity. I counted at one stage about 50 organisations at the national level that are involved in funding or doing natural resource management research. A large number of those would be involved in salinity work or salinity related work. Now that we have regional delivery of major national programs, there are 60 or 70 regional bodies that are charged with putting the information into effect on the ground. So the number of players has increased dramatically, and the difficulty of finding out what all of them are doing at any one point in time has increased accordingly.

Ms CORCORAN—I just want to step away from what we are talking about and then come back to it in a few minutes. I should know the answer to this question but I do not. You have people who actually live and operate on the land, and then there are the catchment management authorities. Are the catchment management authorities made up of people on the land, the operators, so that if you are talking to the CMAs you are talking to the operators or the users, or is there a mixed bag in there?

Dr Price—This goes to the heart of democracy really—whether you represent every one of your constituents. Different catchment management authorities, depending on which state you are talking about, operate slightly differently. They all have representation that includes producers, but they are not made up solely of people who are necessarily farmers. They do represent the kinds of interests within a region. As to whether you could actually say those people fully represent such a heterogeneous group, it is very difficult to say.

Mr Goss—You will see enormous variation across Australia. In places like Queensland and Western Australia, where they are groups without any particular statutory backing, they will behave and communicate as a community based committee. But at the other end of the spectrum you have the catchment management authorities of Victoria and the catchment management board in South Australia, which clearly have statutory responsibility. While the people involved will talk in terms of representation, the fact is they have crossed the line in a way; they have their own roles and responsibilities under statute which they have to exercise. So they will be very careful in the exercise of that authority.

Ms CORCORAN—The reason I wanted to make sure I understood that properly was that in your summary you talk about how your ground water flow system, for example, has changed how state governments and catchment management bodies devise strategies, and I was not too sure who were devising these strategies, whether the people on the ground literally—

Mr Campbell—It varies.

Ms CORCORAN—It varies enormously, does it?

Mr Campbell—I understand you have been to Shepparton. That is probably the most well-resourced catchment management body in Australia where you have a considerable professional staff and a considerable budget. So essentially you would have professional staff developing those strategies under the direction of a board. There are other bodies across Australia that do not even have a single member of staff. So the personnel doing the work will vary considerably across Australia.

Ms CORCORAN—One of our interests is whether the science reaches the operator at the end of the day. This is why I am asking these questions. In the four points that you made, Kevin, you talked about an increase in understanding and dissemination of knowledge being there. But who is understanding more? Is it the chap on the land, is it the scientists or is it all of us?

Mr Goss—I just want to make a point about where the decisions in management lie. The way I found it easier to characterise dryland salinity is to first look at where the impacts fall and what drives decisions to do something about it. We do talk in millions of hectares when it comes to impact on farmland—and it is millions to tens of millions of hectares potentially. The moment

you think about that, then you have to think about farmers because they are the ones who are impacted and they will be driven to respond. But, as I think we have said, the signals for them to respond are pretty weak. It hits them incrementally in terms of loss of land. They are dealing with changes in the Aussie dollar, with cost price squeezes, with seasons and so on, and their productivity improvement over decades keeps up with this by and large. So that is their decision world, which is quite a challenging one.

But we are also dealing with irrigation authorities who are dealing with increased salt loads in their water supply—a very different body and therefore a different client in terms of the information we are talking about. We are also dealing with local government authorities—Main Roads engineers, the grain handling authorities, city engineers—when it comes to impacts on infrastructure. That is another group of decision makers who have to deal with the impact of salinity on them. We are also dealing with national parks agencies, forestry agencies and so on because it is impacting on nature reserves and national parks. So there is a complexity about whom the decision makers are. Getting information to farmers has been a high focus by the state agencies for a long time, but their capacity to deal with that has diminished over time. There is no doubt about that.

Ms CORCORAN—They being the farmer or they being the state agencies?

Mr Goss—They being the state agencies. Their capacity to service farmers has diminished because states have withdrawn from that 'public good' extension service, as Richard said. But the R&D corporations and some of the CRCs have attempted to cover off on that and to run their approaches. Land and Water Australia and NDSP are involved in some very specific programs in that regard. So we have adapted for farmers. While I would not for a moment suggest that there is widespread access to farmers, at the moment—and this bears out Richard's point—we are not dealing with, first and foremost, a lack of capacity of farmers to pick this up and go with it; at this time we are dealing with lack of solutions which have to be developed commercially, which involves farmers in research partnerships, for sure.

Mr Campbell—I think one thing that has been underrecognised considerably is that in recent years, primarily through the NDSP, the meat, wool and grains industries have actually become major funders of salinity research. They do not get much credit for that, but they are now major investors in dryland salinity research in trying to develop profitable commercial solutions. But I would go a bit further than Kevin and say we have not developed comparable mechanisms for shire engineers, roads authorities or some of the off-farm downstream impacts of salinity as well as we have back at the farming system end.

Ms CORCORAN—You talked before about critics of where R&D money ought to be spent. Is it the same disparate group of people who are making those sorts of criticisms?

Mr Goss—My reading of the criticism is that it is more about how you handle your public investment in salinity outcomes, way beyond R&D. There is a lot of debate around whether you do it through catchment management approaches, whether you do it through regional delivery and so on. I was just reflecting that—I was not entering into that debate necessarily—and making the point that, if you peel that away, nobody is disputing the sustained R&D effort is central to this.

Ms CORCORAN—I was going back to a comment you made about that very point. You were making that very point, and I understood you to say that no-one is disputing R&D should be taking place; it is a matter of where it should be. The argument has moved from there to the critics now saying, 'You should be doing R&D here, not there,' not that you should not be doing it at all. I was trying to work out whom those critics are. It is probably the same group you were talking about before.

Mr Goss—I will give you my example, and I just preface it by saying I had a sort of Damascus type experience recently when I was invited back to Western Australia to do a keynote address to the state Landcare conference, which I last gave 10 years earlier. At that time I had reviewed Landcare 10 years before that. I had to get into some of these questions about criticism, whether we had delivered and where the problems are, and it made me realise that the basic human behaviour here has not changed. You can go back and look at 50 years of rural sociology on what switches on farmers to adopt new technologies, new land use practices and so on, and it basically has not changed in 50 years. At the core of it there has to be some demonstrable advantage to farmers. It is not straight maximising of profit, but certainly it has to make commonsense financially. It has to be able to fit in with their practice. I will not go into the detail, but it is really quite commonsense when you hear it. That has not changed in 50 years.

I went back and looked at some work that I was very familiar with in the 1970s—I am talking a long time ago here—about value orientation to farmers, and basically it has not changed that much either. What has changed is the very issue we are trying to manage here. So they have probably on their own terms continued to behave in a rational way as business managers, and I think we should not forget that. But this major natural resource management issue is changing, and it is changing on us. So what we are trying to do through R&D is deal with what that throws up, knowing full well what drives farmers.

Mr FORREST—I noted that in your submission you stated that this program finishes in the middle of 2004. I think that was the original intention, that you actually worked yourselves out of a job, I suppose. What is your position on post-2004?

Mr Goss—I will not pre-empt what Richard and Andrew want to do here, but I will speak as the chair. I would like to see the National Dryland Salinity Program continue—no, could I delete the word 'continue' because that is the very issue. I think there is a very clear case for a national dryland salinity program in the future. We were very careful not to argue the case for more of the same because we do not think today's circumstances require more of the same; hence, my problem over the word 'continue'. So we elected to do a full evaluation of the program, not constraining ourselves by what it threw up or what happens in the future. So we have left the future wide open. We did the evaluation and then said, 'There is so much here that we have to communicate this and focus on that effort over the coming 12 months.'

There are other reasons for doing it in terms of investors and what they wanted too, and they wanted to keep their options open. I can speak for the Murray-Darling Basin Commission, for instance, as part of that. So a very strong evaluation, some very important information thrown up; some very key questions raised which have not been answered yet—and we have been through the six—and a very strong communication year. As the outgoing chair, I do not want to die wondering about a national program in the future. I am not saying it has to be the same as this—far from it—because I think the world has changed with the now 50 or more research

providers and with the new regional arrangements, but I still think there is something there to go with to the new players and really talk it through to see whether there is a program in the making that they could invest in, that has flexibility and that can also draw upon the infrastructure and momentum of the existing program.

Mr FORREST—Could I just take the question a bit further, because it goes to some of my anxieties. Last Tuesday I was out at Carwarp—Kevin will know where it is—with a Landcare project funded by NHT on two farmers' properties with some dryland lucerne in the middle of the mallee and old-man saltbush in the worst-affected areas. I said to all the young scientists around, 'I hope you are documenting all this good science,' because there is an argument about the benefits of old-man saltbush. They said they were, but I know what will happen to it: it will end up in a nice little, compact project report that will get locked up and no-one will know it is there. So I was interested in the suggestion in your submission about the role of a knowledge broker, somebody who could take an interest in that little project in the middle of nowhere but disseminate it in some way that will encourage another farmer, maybe in the South Australian mallee, to take an interest. Is that the kind of role you are talking about?

Mr Goss—Yes.

Dr Price—In the National Dryland Salinity Program in each state we employ what we call knowledge brokers. They tend to be either consultants or people associated with state government agencies, but not so tied down to the politics of individual agencies. They do work with the communities to explore what their issues are, listen to them and provide them with feedback as to what the National Dryland Salinity Program has to offer them as well as what other researchers have to offer them.

Agricultural science is a little bit different to many other fields of science. You cannot just write up the results. You cannot just go in with a hypothesis, test it, come up with a conclusion, write up the results and expect other people to adopt them. The nature of innovation in agriculture is that you have to discover it and rediscover it and rediscover it. It is a matter of not just writing up the results that you are talking about of those projects and giving them to somebody else and expecting them to adopt them. They, too, have to go through a learning process.

If the National Dryland Salinity Program does move forward, I would see it setting up a process by which we can actually work with industries and groups to allow people to go through that learning process time and again. Here is where it gets very difficult, because we need to go way beyond science and it starts to become resource intensive if we keep relearning processes. There are plenty of examples of reports that have been written up of projects of the kind that you are talking about that get put on shelves and are left alone. But we believe the network that we have started across the country is something that we can build upon, where people do work with farmers to go through that relearning process.

Mr FORREST—There are lots of those reports on shelves right across the country. With the amount of money we have spent on them we could have piped the Murray salt to the sea by now.

Mr Goss—I thought we were talking about dryland salinity, and we will debate that again another day no doubt. I make the additional point that there are some examples of where

somebody has taken the opportunity to respond and come in over the top of those reports, pull them together and do something new with them in an entirely integrated or synthetic way, and they have become bestsellers. One of them is in fact a document that NDSP did, and we are now looking to redo it, on just the basic tools to manage salinity. So that is really important—that there is a world beyond the reports when it comes to adding value to them.

I will mention a couple of others—you will probably come across them. Two that CSIRO put out were called *A revolution in land use* and *Effectiveness of current farming systems*. They went through a print run of 5,000, then another print run of 5,000 and so it went on. So there are things you do over and above the reports, and you keep the information alive, you synthesise it, and the important thing is that nothing stays the same. Some of this work done at a certain point in time is still very relevant today but the economics or something else has changed and you bring it up afresh. I think that is really one of the important things that we are suggesting here.

Mr FORREST—Just to reinforce my point, I have on my shelf reports about old-man saltbush and lucerne which were done in 1970. But, here we are, we are still trialling it and—

CHAIR—We saw on Thursday where saltbush was a failure near Wagga.

Mr FORREST—But they are still doing it. Nearly 300 acres of old-man saltbush were planted in the project I was on.

Mr Goss—Can I just continue the debate with you a little, on saltbush particularly. Saltbush has been around a long time. It is a bit like canola. You will find exactly the same story of failure and success with canola as you might do with old-man saltbush. Saltbush has been advocated since I came out of university in 1969, and there are people in Western Australia who have spent their whole career on this. A program we are working closely with, the PUSL program, or Productive Use of Saline Land program, is party to a second edition of a book on salt land pastures in Australia. A lot has been learnt in that time. Thirty years ago they were focusing on establishment and plant survival. Now they are focusing on commercial production systems. So things have really moved on. You will see failure among that success, just like I did with canola, in the same 30-year period.

Mr HATTON—In terms of mapping and data sets, there has been a dramatic reduction in minerals exploration in Australia. Consequent upon that, there has been a dramatic reduction in the number of geologists employed, the number of hydrologists employed and the employment of people with specific not only knowledge but also capacity. Have any of those people transferred into this area and taken up new careers? Has that filled a hole that otherwise would not have been apparent?

Mr Goss—I will just preface this by saying I am an independent director on the board of the Cooperative Research Centre for Landscape Environments and Mineral Exploration, and that clearly is central to that CRC's interests. It is a CRC that is charged with advancing mineral exploration through those sorts of surveillance technologies and applying those technologies to not only salinity, although that is a very important part of it, but also other environmental issues.

I think it is fair to say that the geologists have not turned up at the natural resources doorstep but the technologies have and the role of hydrologists and hydrogeologists has become

incredibly important. It is a bit hard to say where the mineral exploration geologists have gone. They really have disappeared. But there has been the crossover of technology and there has been a crossover in this hydrogeology area. Organisations like Geoscience Australia have handled that reasonably smoothly. At the state level they tend to be in different agencies, but there is no doubt that natural resource agencies, land agencies and primary industry agencies have been able to build their capacity over recent years to assist in the whole mapping exercise. This operations committee that we have talked about at NDSP has some of the national leading lights in that particular area.

Mr HATTON—Associated with that, Dr Washer and I are on a committee which has brought down a report which has focused in part on making data sets available for mineral exploration. The work Geoscience Australia has done has been very important. There seems to be a pretty clear focus nationally amongst the explorers and the end users of the work that has been done that we need to get this together on a national basis. There has been a fair amount of cooperation. Is there the same level of cooperation between the Commonwealth and the states when it comes to mapping salinity?

Mr Goss—Not yet. I am not saying it will not happen, but there is a bit of hard work to be done. One of the things about mineral exploration is that it tells you where it is, whether it be a conductivity signal or a radioactivity signal or whatever. What we have to struggle with in relation to salinity is what is driving it, where it is coming from, where it is going to, whether it is moving vertically or horizontally, or whatever.

Mr Campbell—And how fast.

Mr Goss—And how fast. That is where the hydrologists really come into play. So what your question is really inviting us to think about is how you take those enormous skills and data sets from mineral exploration, which give you signals in situ, and then to bracket that with this understanding of hydrology and the energy that is moving this salt in the landscape at different speeds and in different ways and then you have the integration. The CRC for LEME, the one I have just spoken about, which has handled crossover in the technology, and the CRC for Catchment Hydrology have a lot of good work to do together to address your question. They are talking right now, and I am instrumental in that, but they have some work to do.

Mr HATTON—Maybe we need to do some work to draw in those hydrologists and the geologists who have gone missing, particularly in, as you pointed out, actually proving this on the ground. You really need trained eyes and trained capacities, and they are probably more relevant now in the minerals area than they have been in the salinity area.

Mr Goss—They would be enormously challenged in doing that. The three of us have more sociological backgrounds than agricultural and other backgrounds, which is interesting. A geologist out of the minerals industry will need a fair bit of adaptation to be able to deal with farmers. One of the really important things we are saying here is that you need to understand what drives the clients and the decision makers at this level. That whole client relationship, with servicing the needs of a mineral company, the hundreds of millions of dollars involved, the risks they are prepared to face, the way they get an enormous advantage out of keeping information to themselves and so on, is very different from the relationship with tens of thousands of small to medium sized businesses where you really have to deal with things in the public domain.

Foresters would tell you that they have struggled in crossing over into that world, and geologists would face the same challenge.

Dr Price—The first attempt to try to bring together all the data sets on salinity was undertaken by the National Land and Water Resources Audit leading to its year 2000 report on salinity, which hopefully has been presented to you at some stage. It is the bible at the moment on the extent and cost of salinity. Undertaking that exercise was hell for those who went through it because, essentially, each state has a different process, a different set of data and different mapping techniques that it pursues. When you try to get a national picture about salinity, you have this enormous challenge of comparing apples with pears across state borders. There is a very real issue that needs to be picked up and pursued there. I understand that the National Land and Water Resources Audit mark II will be doing some of that.

CHAIR—The latest buzzword is 'interoperability'. That is one word to describe just what you said.

Dr WASHER—Kevin, you seem to have been able to network R&D agencies like CSIRO with business, industry and other stakeholders. You have done a pretty good job in getting them together. If you were to go, who would be best placed to carry this work on? I think there is still funding of a billion dollars in the Natural Heritage Trust and $700 million to come out of the Commonwealth national action plan, with state government to make an equal contribution. There is a lot of money still to be spent. You seem to have been able to network the science which we are concerned with to get the best outcomes, which are going to evolve, as you have recognised, with some economic commonsense. I think Richard said that, economically, the reality is some things you walk away from, some things you manage and some things you try to prevent. Who is going to do this? What is going to happen in the future? Who is taking over? Is the funding to these water authorities appropriate to achieve this?

Mr Goss—I want to come back to Andrew's comment. On his count, and I have no reason to second-guess it, there are about 50 institutions involved in R&D for salinity. The challenge for the National Dryland Salinity Program is: is there an opportunity to really add value in that very crowded world of 50 R&D institutions or are you simply creating the 51st one, which would not solve the problem? Rather than trying to settle on who has the answer, I am suggesting there are some key players that are very stable in this world of salinity R&D: Land and Water Australia, CSIRO, the Murray-Darling Basin Commission and the Department of Agriculture, Fisheries and Forestry. They have enormous interest in and a mandate to pursue the matter. I want to spend my time on behalf of the outgoing NDSP going to these key institutions as potential investors or stakeholders and saying, 'How would you want to run this in the future? We think that networked or shareholding approach has worked in the past. Let's fully test it for the future.'

Mr Campbell—I will be further expanding on exactly that point on Friday with my Land and Water Australia hat on. We have been the managing agent for the NDSP for 10 years now and the major research investor in the program. Our board has decided that it is time, after 10 years of being the major funder of dryland salinity research in Australia, that we should be looking for the issue now that was the salinity issue of 1993 when we started funding this area. We have an obligation to be looking over the horizon. When you have a national action plan, the Natural Heritage Trust and all these other players, it might be time for us to direct our research funding elsewhere. But the board made it very clear that we are quite happy to continue playing a

coordination and broking role in salinity R&D; we are just not prepared to be the majority funder for the next 10 years like we were for the last 10 years. I hope the NDSP does not fold up its tent on 30 June next year. Like Kevin, I hope we can reconfigure something that better meets the needs of this more crowded environment where there is, in global terms, a lot more money being spent by a lot more players than was the case when this little collaborative effort was set up 10 years ago.

Dr WASHER—Roughly, what percentage of the national action plan and the Natural Heritage Trust funding would go into research? I know it is a pretty awkward question.

Mr Campbell—That is a pretty loaded question.

Dr WASHER—Do you feel it is enough?

Mr Campbell—Those programs were not set up to fund R&D. That was not the rationale behind establishing those programs, and they have been pretty true to that. The national component of the Natural Heritage Trust has funded some strategic research activities and continues to do so. We have research funding out of the Natural Heritage Trust for climate variability research, for sustainable irrigation research and for some other areas as well. In the past we have had it for native vegetation and biodiversity in wetlands and river health research. It is not true to say there has been no funding out of those programs for research, but it is a very small proportion of the total effort. But, to be fair, that is not what they were set up for.

Dr Price—The Commonwealth has obviously chosen to take the regional path in its delivery of salinity programs. That is a very commendable decision and it is quite consistent with everything that we have found over the last 10 years. Solutions are going to be very different in different regions. In terms of the right amount of funding for salinity, I would not hazard a percentage on it. But if each region were putting in five per cent, which meant that nationally you were putting in five per cent, would it be the same five per cent? Would it be the same effort that you would do if you had chosen to have a generic R&D approach with very close ties to the regions as opposed to 21 different five per cents that are not interconnected? That is what has happened at the moment. Choosing a right percentage, or even knowing what that percentage is, is very difficult. It is the fundamental issue of how far you take regionalism versus a generic way of approaching these kinds of coordination tasks.

Dr WASHER—Let us take the issue of federal funding, because the committee members around this table are responsible for that. It would appear we are releasing a helluva lot of taxpayers' money to take action—it is an action plan—when we do not necessarily have the full set of skills to know what action to take. Historically, it has proven to be a stuff-up. That was the diplomatic word I was looking for. How much federal money should we release to a coordinated research and development program to evolve the actions that have been historically mucked up and to prevent that mischief from continuing? We wasted countless millions of dollars in WA planting trees which I think are all dead now. Seeing it is mainly federal money, although the states are contributing, shouldn't we take the federal line of having the responsibility, coordinating it and saying, 'Let's put it into R&D,' so that the actions are at least state of the art and coordinated with the best science, knowledge base and communication technologies?

Mr Goss—I would agree that that is the case. But then I would throw the challenge back to the Commonwealth government and say, 'Yes, definitely. You are a major investor in dryland salinity outcomes in Australia. Let's look at how you invest. Let's do an audit of how you invest in this,' and then look at the R&D question. I would bring into the audit the Commonwealth funds that move through CRCs, of which there are several that are speaking to dryland salinity—we have mentioned plant based management, LEME and catchment hydrology—the Commonwealth money that goes into R&D corporations and the Commonwealth money that goes through these programs, plus through the agencies themselves. My response is that this is a new era, we have backed ourselves to handle salinity this way, now let us look at all that we have available to us in steering R&D forward and directing it in a new way according to the strategic direction we have now set. That which is set aside for R&D is not simply—I think Andrew was saying this—the national action plan; it is how the total investment is handled. There is a fundamental change required because the circumstances demand it.

CHAIR—It is not only dryland salinity that the Commonwealth is putting funding into. You can bring in then the CRC on Irrigation Futures and all those sorts of ones as well.

Mr Goss—We have driven the distinction between dryland salinity and irrigation salinity too hard for too long. It does differ across Australia, but there is no doubt in the Murray-Darling Basin, for instance, you cannot now differentiate the two. Some irrigation areas now are suffering a net disbenefit because of dryland salinity. The Coleambally irrigation annual report of the last three years shows that the salt going into that irrigation district from the rivers delivered out of upstream dryland catchments is more than the salt coming out of those irrigation districts back into the rivers.

Mr TICEHURST—Dr Price, you said in your opening statement that it was not just an agricultural problem; it was a choice between what can and what cannot be fixed. What sorts of problems do you think are very difficult to fix?

Dr Price—The example that Kevin gave—and he might be able to provide a very specific example within the Murray-Darling Basin—and they relate to potentially the trade-offs between managing recharge and managing water yield within a catchment and getting the balance correct. Kevin, you have lived through this.

Mr Goss—Thank you, Richard. Well done. I think you have handled that superbly.

Dr Price—It may as well be a practical example rather than a theoretical one.

Mr Goss—I will speak for the southern Murray-Darling Basin for the moment, and this is headlines—there is a lot of debate between the forestry industry and natural resource authorities. If plantation forestry were to achieve its current national objective in its strategic plan by 2020 of three million hectares of commercial plantation forestry, then that would have enormous implications for water resources in the southern Murray-Darling Basin. There is a straight trade-off between that land use change and water.

On the other hand, here we are advocating the reintroduction of deep-rooted perennials further down the rainfall isohyets targeted at salinity, which does not entirely overlap with the high-rainfall plantation forestry. It is in the medium to high-medium rainfall zones. Whether they

be targeted forests going into that area or they be other variations of that, you still suffer that trade-off but to a lesser extent. It is very rainfall dependent. It is also dependent on the nature of the ground water flow system. You get high response in local ground water responsive systems, but you do not see the response to forestry in regional systems. It is now pretty well documented that, in principle, returning land use from current back to perennials, particularly forestry, knocks down the surface yield pretty quickly. It takes time to slow down the energy that is driving the salt to the rivers, so your dilution works adversely against you and you see a temporary rise in salinity in the river before you start to see a fall. That is the dilemma, and one of the big dilemmas.

To work our way through it requires us to deal with rainfall, because it is responsive to rainfall, to deal with ground water flow, to deal with the commerciality of forestry and other land uses and so on. The Murray-Darling Basin Commission, with the CRC for Catchment Hydrology, has looked at whether you can make your way through that, and you can in fact identify catchments or subcatchments where you can get it right—that is, the circumstances allow you to deal with salinity with the use of deep-rooted perennials again but not get yourself into too severe a trade-off area. That work is well advanced. In fact, I could bring it back here and show you a real example. I could do that later this week when I come back here representing the Murray-Darling Basin Commission.

Mr Campbell—If I could bring that down to a micro level, we have a family farm in western Victoria. We have about 17 acres of salt out of 1,200 acres. It is just not economical to try and fix it. We have a salty creek running through a low part of the property. What it would cost us to try and return that creek to fresh condition is just simply out of the question. It would be more than the total value of the farm. But I can live with that 17 acres of salt without any worries at all through the pasture mixtures and the agronomic techniques that we have developed with NDSP research. So it can be a useful part of our farming system, it is not a terrible eyesore and it can actually make money, but the salt is still going to be there. You have not actually fixed the salinity problem; you have just learnt to live with it. That is by far the most economic option in that situation, as it is for many farmers in like situations across Australia. If we had a downstream water user, they might not be happy with that solution, but that is the economically sensible one for our family at this time and for the foreseeable future.

Mr FORREST—If it were increasing at the rate of 15 per cent in area per year, you would be motivated to arrest it.

Mr Campbell—That is right, but it is not. If it threatened to take out the whole or a substantial part of the property or to impact on our bottom line dramatically, you would weigh that up. If you are low in the landscape in the Western Australian wheat belt, you may well lose very large proportions of your land. But in south-west Victoria that is certainly not the case. The main receivers of the costs are people interested in water quality, in roads and so on. It is not really an agricultural problem in that context.

Dr Price—The Western Australian wheat belt has a number of freshwater and saltwater lakes. Many of them are under threat. One lake, Lake Toolibin, has had roughly $20 million put into it by the Commonwealth and state governments to protect it. How many umpteen lakes do you throw $20 million at throughout the Western Australian wheat belt? We as a nation or as a society cannot afford to protect every single one of those. These are assets, and they are not just

wetlands. There is also the question of remnant vegetation in Western Australia, with less than seven per cent remaining in some areas. Much of that seven per cent is actually in areas that are most at risk of salinisation. Whether you say goodbye to some of that or you throw a lot of money at it is a very difficult choice to make. But by default, with the amount of money that is going into those protection strategies, we are saying we will kiss it goodbye.

Mr LINDSAY—Gentlemen, if I ask a question that was asked while I was out, just tell me. In point 1 of your four key points, you say among other things that the NDSP has been instrumental 'in sharing information across a broad range of networks and target audiences'. Has the NDSP had difficulty in collecting that information? How do you get it all in from all of the sources in the first place? Have you had any problems there?

Dr Price—We have a number of ways of doing it. There is information versus data. The structure of the National Dryland Salinity Program includes Australia's best scientists sitting around a table, and they do it at a technical level. In relation to the more important level, though, the information level, I spoke earlier about having across Australia foot soldiers, knowledge brokers, who interpret the research that we develop, interpret other people's research, interpret local knowledge together with that of other people who are recipients of information. It is a very big task, and it is not one that we are incapable of doing.

Mr LINDSAY—But the short answer to the question is that you have had no difficulty in getting all of the information that you need?

Dr Price—With the proviso that there are no answers for many problems that we have in Australia.

Mr Goss—It has been relatively straightforward. It costs money, and we have to continue to draw people together who benefit from that experience, and they are delivering benefit from that experience.

Mr LINDSAY—In point 4 you claim that you are 'the most appropriate framework to coordinate across jurisdictional and industry boundaries'. Does that mean that you want to be the repository of all scientific knowledge and then distribute it from there?

Mr Goss—I said earlier—I am not sure whether or not you were here—that I baulk at 'depository' because I think this is a network. One of the really interesting things about these people who come together, and we have had little trouble getting together these very senior experienced technical people, is that when they sit around the table and you ask them who they are you find they are NDSP and CSIRO or they are this and they are that. So it is not a depository in one place; it is a very active network where information moves. If you ask where the information is at any one point in time, it will be distributed but you have a network that pulls it together.

Mr LINDSAY—So you have all this information. Does it actually get down to the farm level easily? Dr Price said much of the information that winds its way down to the farmers comes from a single source and you do not get a balanced view. Talk to me about that.

Dr Price—We are not the only knowledge brokers in this game. I think we have to accept that, whilst we are trying to integrate knowledge broking and to get down to the producer level, there are many agencies that undertake research and development that do have an information conduit. In many of those cases, yes, you are getting only silver bullet answers going out. It has been in only the last 12 months that we have really had the capacity to start synthesising a lot of this knowledge. In fact, the current year, our final year, is called the 'enhanced communication year', where we are concentrating on that effort. But we do have one advantage that many national—we call them 'national'; often they are government talking to government—programs have in that we are not a threat to industry. They are part of the National Dryland Salinity Program.

Mr LINDSAY—Okay; do not go any further there. Andrew, you said 60 or 70 regional bodies are delivering on the ground with little coordination. How would you suggest there should be coordination?

Mr Campbell—I do not think that the sort of coordination that one needs is telling them what they should be doing. I think the sort of coordination we are talking about is of the nature of a first-stop shop, if you like, for finding out where information is—whom I should be talking to, whether any work has been done on this and, if so, where; where I can find out more about it; who are the relevant bodies to be talking to about it. That is the role that we think that the NDSP has played and can continue to play. The more players there are out there, and it is at an unprecedented level at the moment, the more you have to keep marketing that role. But it is certainly doable, going forward.

Mr Goss—Can I just reinforce a point—I will be very brief—about their getting advice from one person in most instances. The question is who the one person is. I think a long history of working with farmers in this area will tell you that, depending on who the farmers are, it could be a Wesfarmers Landmark agent, it could be a scientist from CSIRO, it could be a government agency extension officer or it could be through a Landcare group. A whole range of people get involved here. They all promote what their penetration is and none of them gets above 30 or 40 per cent, even the industries. So it is how you support all of that in its diversity, because that is what it is. So when we make these statements it is one step behind the scenes in how you support that whole infrastructure.

Mr FORREST—Just briefly on that point—I was going to try to pick it up earlier but you have now gone back to it—the best person to encourage a dryland farmer to take up an economic option is his neighbour who has made a buck. That is the message and simple language to those sorts of people: 'This would be your gross return if you did this.' But I do not know that we have got good at that yet, to test you on that issue.

Mr Campbell—I think that is of significance: the industry is coming in and starting to fund this work itself. The GRDC, Meat and Livestock Australia and Australian Wool Innovation have their own mechanisms for getting out to farmers. They do not have programs called 'How to fix salinity'. They have programs on how to grow better wheat or how to manage pastures better. It is when you are getting salinity management recommendations feeding into those industry based programs that you are likely to get farmers to use the more efficient distribution mechanisms of industry to get that sort of stuff out there. But in the first five or seven years of salinity work we

are still trying to understand the nature of the problem. We are a long way away from turning that into farming system advice.

Mr FORREST—I have a really good example. The Birchip Cropping Group down in north-west Victoria is just getting bigger and bigger as a network. Perhaps you could get that notion into that group as well. They are interested in salinity related issues.

Mr Campbell—That is exactly what we are talking about.

Mr Goss—Some of those groups are really at the leading edge because they can take care of some of the perceived risks. The neighbour-to-neighbour method is a fairly conservative method of information moving through because quite often people do not want to go out on a limb among neighbours. There are some very old stories from the early days about contour banks and so on where farmers would practise them in their back paddock, not up near the road, because they were worried about perception if they failed or whatever. That method is by its nature conservative. But these groups have broken through that. The groups that have come out of some of these industry R&D corporations share the personal risk of trying something at the cutting edge, and I think that is where they are just so important.

Mr Campbell—And they tend to be groups of peers rather than groups of neighbours.

CHAIR—We saw a little of that last week. A farmer who is an advocate for change and things that need to be done is a good person to be involved in various organisations and getting that message through to the community because they are more likely to be listened to than a suit, as somebody described it.

Mr FORREST—My confidence has been shaken a bit about trees. You have mentioned it a few times, Kevin. Massive amounts of capital are going into planting trees—I have given up trying to count—with motivation of Landcare, the communities, buses coming up from Melbourne to have big working bees, people camped out on the ground, millions of trees, and now we are being told they have been put in the wrong places. Is that a good example of not getting it right?

Mr Goss—I think the currency we are working in is not trees. Trees are a means to many ends, and people respond to them in different ways. I guess my question coming back is: trees for what? I am not shaken in my resolve to manage salinity in certain ways, and I still see new commercial prospects around trees, shrubs or other perennials as very much part of that. But we have to be very smart in how that unfolds.

One of the best examples I know of, and I have not mentioned it today, is the mallee initiative in Western Australia—not because it is successful, far from it, but it is the way you think through integrating trees into a commercial operation. But then there are trees for quite other reasons, and I do not think we have been very clear about this—trees for biodiversity outcomes, but in very different ways, and trees for aesthetics and amenity. In some of these areas it is very important to get trees and shrubs back in the landscape, whether it be road verges, buffers around nature reserves or whatever. They are very important in the landscape. So I think it is not an argument about trees; it is an argument about what we are doing to meet different objectives and how smart we can be about it.

CHAIR—I was going to ask you about the costs you mentioned before of getting information and data, particularly the cost of acquiring data from state agencies, but maybe we can ask that on Friday as a follow-up. Thank you for your evidence this afternoon. We appreciate it.

Resolved (on motion by **Ms Corcoran**):

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

Committee adjourned at 6.21 p.m.