



COMMONWEALTH OF AUSTRALIA

Official Committee Hansard

**HOUSE OF
REPRESENTATIVES**

STANDING COMMITTEE ON ENVIRONMENT AND
HERITAGE

Reference: Catchment management

MONDAY, 22 NOVEMBER 1999

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HOUSE OF REPRESENTATIVES
STANDING COMMITTEE ON ENVIRONMENT AND HERITAGE
Monday, 22 November 1999

Members: Mr Causley (*Chair*), Mr Barresi, Mr Bartlett, Mr Billson, Mrs Gallus, Ms Gerick, Mrs Irwin, Mr Jenkins, Dr Lawrence and Mrs Vale

Members in attendance: Mr Barresi, Mr Causley, Mrs Gallus, Mr Jenkins, Dr Lawrence and Mrs Vale

Terms of reference for the inquiry:

To inquire into catchment management, with particular attention to the following matters:

- the development of catchment management in Australia;
- the value of a catchment approach to the management of the environment;
- best practice methods of preventing, halting and reversing environmental degradation in catchments, and achieving environmental sustainability;
- the role of different levels of government, the private sector and the community in the management of catchment areas;
- planning, resourcing, implementation, coordination and cooperation in catchment management; and
- mechanisms for monitoring, evaluating and reporting on catchment management programs, including the use of these reports for state of the environment reporting, and opportunities for review and improvement.

WITNESSES

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Committee met at 10.05 a.m.

FERGUSON, Professor Ian Stewart, President, Institute of Foresters of Australia

O'SHAUGHNESSY, Mr Patrick Joseph, Member, Institute of Foresters of Australia

CHAIR—I declare open this public hearing of the inquiry by the House of Representatives Standing Committee on Environment and Heritage into catchment management. This is the fifth hearing of the inquiry. Over the last month the committee has visited New South Wales and Queensland to talk to catchment management groups and conduct public hearings. We intend to conduct similar inspections and hearings in other states and territories next year.

At today's public hearing the committee will hear from the Institute of Foresters of Australia and the Australian Water and Wastewater Association. Before proceeding, I advise the witnesses that committee public hearings are recognised as proceedings of the parliament and warrant the same respect that proceedings in the House of Representatives demand. Witnesses are protected by parliamentary privilege in respect of the evidence they give before the committee. Witnesses will not be asked to take an oath or to make an affirmation. However, they are reminded that false evidence given to a parliamentary committee may be regarded as contempt of the parliament. The committee prefers that all evidence be given in public but should witnesses at any stage wish to give evidence in private they may ask to do so and the committee will give consideration to the request.

We have received your submission and I am sure the committee have had a close look at that. Would you like to make an opening statement?

Prof. Ferguson—Thank you, Mr Chairman. I should point out that the institute is a professional body representing forest resource managers and scientists who are dedicated to the conservation and development of Australia's forests in a manner that meets the needs and aspirations of Australian society. In that we recognise, of course, that those needs and aspirations are changing and this committee is really addressing an area in which we believe change is needed.

The areas I would like to emphasise rather than deal with in detail in our submission concern, firstly, a reforestation program for dry inland forest types and woodlands. I draw the committee's attention to the extent of salinity problems that are arising in the Murray-Darling Basin, which I am sure they are well aware of, but some 100,000 hectares are presently salt affected. A further 560,000 hectares have rising water tables which are rising to within two metres of the surface and a further 300,000 hectares of dry land is salt affected, or shortly expected to be. Estimates go beyond that even up to nine million hectares of salinity affected area in the basin. Similar sorts of figures apply to the south-west of Western Australia in the wheat belt.

We believe that is a serious problem in which reforestation can play a part. We do not wish to give the impression that we think it is a panacea, because it is certainly not. But we think it has an important part to play in the problem of trying to ameliorate in the long term salinity affected areas and the increasing saline affected areas in those two major catchments.

The other area I would wish to make reference to is in relation to codes of forest practice. My colleague will say a little bit more about the detail of them but I just want to stress that we see this as being an important area not only in relation to public forests but in relation to private forests. The Institute of Foresters has been active in developing a registration scheme to improve the training of its members to be able to handle the development of those codes of practice in those areas as well as public lands.

Mr O'Shaughnessy—Thank you. Basically, I guess the things I would talk about, or be open to questions about, are the importance of well designed and properly implemented codes of practice and the connection to both water quality and water yield. I certainly stress the importance of good road construction for the protection of quality. Good road maintenance implies frequent drainage, maintenance of road shape, prevention of road drainage stream entry, prevention of poor road placement and protecting the stream by the maintenance of an undisturbed buffer, with varying buffer widths depending on soil and slope.

I would also like to comment on the fact that forest practice should avoid soil disturbance and should avoid causing any inappropriate road drainage. Undisturbed buffers are best left intact around streams and, depending on the code, they are more important where a stream is permanent. I would also stress the need for research to carry on in order to ensure that the standards applied are appropriate and adequate for water yield and water quality maintenance. Where a forest is subject to wood utilisation it is important the buffers are kept intact and that undrained snig tracks do not flow into buffers. I think that is probably a basic statement.

CHAIR—Could we start off with the water quality and yield, I suppose, in catchments, which I think is going to have an effect on this inquiry. Does the institute have any research as to what effect forestry has on (a) yield of water and (b) quality of water in streams?

Mr O'Shaughnessy—The institute itself, by the way, does not do any research directly but it certainly encourages its various members to—

CHAIR—Yes, your members research programs.

Mr O'Shaughnessy—There has been a long history of research into water yield and water quality various organisations have conducted in the past, such as Victorian Forest Service and Melbourne Water. The New South Wales State Forests have conducted extensive catchment hydrology research. So there is a long history of research into the implications of forest management. So, yes, it is important that that research continues.

CHAIR—I think at one stage the New South Wales forestry around the Nambucca, I believe, in northern New South Wales were taken to court over water quality. I think it was a land and environment case. Did that lead to different practices? Have you any comment on that?

Mr O'Shaughnessy—I am not familiar with the one you are talking about but the New South Wales Forest Service does have a code of practice relating to maintenance of water

quality in terms of forest harvesting and roading, which is a very strict code. Properly applied, it would be more than adequate for the protection of stream resources.

CHAIR—I do not know whether you have seen the photographs but I believe New South Wales forestry have photographs of clearing of catchments in the past and the subsequent regrowth. Do you know of any of that effort and if it is available to show the regrowth that has occurred in many of the catchments, say, since 1900?

Prof. Ferguson—I do not know specifically of examples of that kind. I am sure they are readily available from records of aerial photography that would have been taken at the time and subsequently. I would think that any of the state services, or park services for that matter, would be able to supply those. It would certainly be the case that there has been some reversion on some catchments, some natural reforestation, but, equally, there are areas which do not readily regenerate and are in less favourable condition.

CHAIR—It is my understanding that there is also some research done on the effect of forestry. Obviously, people criticise forestry in certain areas. It is my understanding that there are certain areas of steep slope, et cetera, that are not logged and that there are certain codes as to where they can be harvested. What is the effect of forestry on these catchment areas? I note that you said ‘no disturbance’. Certainly in the woodchip areas of the south you could not say there was not some disturbance; there is.

Mr O’Shaughnessy—I can only talk generally, but certainly the Victorian code prohibits any logging on slopes of over 30 degrees.

Prof. Ferguson—Yes, I think New South Wales is the same.

Mr O’Shaughnessy—Yes, so logging occurs where the slopes are less than that, up to 30, providing it is good practice. All these things are done with the assumption that practice is appropriate. You do not log during wet weather; you do not log steep slopes. Providing you keep away from steep slopes over 30 degrees and providing you do not log during rain, the impact of forest harvesting is normally manageable. The thing that protects streams is an intact buffer around the streams. There is normally a minimum of 20 metres, which can be up to 40 metres wide, around all streams. Where they are ephemeral—only flowing during certain times of the year; buffers are a bit less—the codes require that these buffers are kept in place at all times. In other words, we can certainly point to plenty of sins in the past when buffers did not exist. We are talking 20 or 30 years ago when the practices were inappropriate. But, under modern day practice, providing they are done properly and properly supervised, the impact on stream water quality is pretty minimal.

Prof. Ferguson—Perhaps one thing I may add there is that of course there is variability in the soil types as to their erodability and that needs to be recognised in dealing with them. Increasingly we are trying to develop more soil specific types of practices and recommendations as to appropriate practices to avoid problems where there are soil types of particularly sensitive erodability.

CHAIR—You mentioned salinity in your opening address, which is obviously one of the big problems of this catchment area, and you talked about reforestation. Have any of your

foresters had any thoughts, any papers, as to how this might be done, given that a lot of this land is private land?

Prof. Ferguson—A lot of it is private; some of it, of course, is also leasehold land and in the public domain in that sense.

CHAIR—Perpetual lease, which they have been told is equal to freehold.

Prof. Ferguson—Yes, but the dividing lines there are not entirely clear. In terms of carrying it through it is clearly going to require subsidies of some kind to do it. The way in which they are developed will be critical not only to the success of that program but also to the impact it might have on other wood production or planting for wood production and other purposes elsewhere. For example, I am sure the committee is familiar with the proposed carbon credit scheme. What we lack in relation to salinity is the capacity to account for salinity in the same way. If we could account for it in the same way we could even think in terms of salinity credits on a parallel basis. That, in a sense, would be the ideal because it would then give the government capacity to target the extent of salinity which it wants to try and ameliorate under that program and, at the same time, do it in a way in which the individuals can do it to best advantage as far as their own enterprises are concerned.

That is not as yet available but I do not think we want to entirely ignore the possibilities of the technology which are developing in relation to remote sensing of salinity and those issues. At the present time it would involve a program of direct subsidies because, as you are well aware, most of these areas that we are talking about are well away from markets. Therefore, if one were to try and go into them on a commercial basis, it would incur substantial transport costs to get any produce to markets. The alternative, of course, is to see them as strictly non-commercial entities, in which case the government probably has to carry the whole cost. The more we can leverage that government subsidy by commercial returns, the more likely reforestation can be accomplished in those areas.

That, I think, is really the emphasis we would wish to seek. That is not to say that commercial returns are the be all and end all, but that this is a massive problem. If we really want to make a contribution to it we have to find every device to try and extend the scope of the reforestation and one way is by trying to leverage the government subsidies with commercial returns to make it attractive.

CHAIR—So you think it is unlikely that an industry could develop to use the biomass?

Prof. Ferguson—Very difficult. Certainly there are some industries which may develop in the future, particularly in relation to biofuels, as we progressively shift out of coal and petroleum based fuels. But that is going to be a slow progression and the returns are not there at the moment to encourage people to make that adjustment right now. Twenty years hence it may be a different story but that is the sort of time scale we are probably talking about.

Mrs GALLUS—In encouraging plantations, greenhouse credits?

Prof. Ferguson—Yes, that is very important. I am in some difficulty on this, Mr Chairman, because I am working on a consultancy for Premier and Cabinet in Victoria at the moment which is subject to a confidentiality agreement. If I can just report in general in relation to that. I realise that the provisions of this committee would overrun that but—

CHAIR—We did a hearing last year which was part heard on the emissions trading, so we have done some of that.

Prof. Ferguson—Yes. The carbon credits, in a general sense, appear to be a very important supplement to commercial returns in wood growing. That is where it will probably have its major effect in the short run, when carbon credit prices are probably—we are all guessing here at this stage—relatively low. But it will be a very important supplement because it makes attractive a much wider scope of purchase of land for reforestation, for plantations, and in that sense I think there is an element of speculation that is already in the marketplace for plantation development that reflects that.

Mrs GALLUS—I think there certainly is. My understanding is that stockbrokers are very busy already trying to sell on the basis of the carbon credits. I might go back to something you said before. You said that logging in wet weather was not a good idea because of the runoff, obviously, into the streams. Streams by their very nature tend to be at the bottom of a catchment area, so you do have downflow into the streams. What happens if you logged in dry weather? When the rain comes are you not still going to have the same problem—the runoff?

Mr O'Shaughnessy—Basically you put in control banks so that the runoff does occur on a snig track. First of all, if logging is carried out during very dry weather, at a time when rain is not falling, the soils normally retain their infiltrative capacity. Rain does not normally generate overland flow on snig tracks. I should say that there are provisos about that, but normally it does not. So major flow of snig tracks is unlikely. They are breached and barred, according to the slope and the soil type, at regular intervals—up to even less than 20 metres apart.

CHAIR—Just explain that technicality . It is to do with soil erosion—I do not know whether you understand that, Chris, but it is like little drains—

Mrs GALLUS—We are getting there. We city people are not totally thick on the country—

CHAIR—I heard the technical term and I thought wondered whether you understood them.

Mr O'Shaughnessy—I am sorry if I just unwittingly quoted in-house sermons; I did not mean to. But, basically, if you can prevent runoff developing along snig tracks, you prevent sediment being caught and deposited into streams.

Mrs GALLUS—I get the principle.

Mr O'Shaughnessy—There is a buffer of a minimum of 20 metres and wider. There is a wetted zone which is normally not logged. There is a buffer outside the wetted zone which, in Victoria, which I know better than any other state, is a minimum of 20 metres but up to 40 metres wide. Logging is kept out of that. So that area remains. If runoff does come into it then it does not enter the stream directly. Any water soaks directly into the soil type and does not flow into the stream carrying any sediment with it. Frankly, the main danger to water quality in terms of logging is road crossings. If you can manage those well, you have basically solved most of the problems.

Mrs GALLUS—I am sorry, can you explain the road crossing.

Prof. Ferguson—The road crossings are where water flows across the road without being caught in a silt trap on the other side and may then run into watercourses. What I wanted to add to Pat's comments is that it is important to recognise that there is a background level of erosion of soil that takes place in forests naturally—particularly in relation to forests which are subject to fire. Very often, if you get heavy rainfall after a fire you will get substantial erosion even in undisturbed forest. It is important to realise that some erosion takes place naturally in any event.

Mrs GALLUS—I am always curious when people point to something happening naturally almost as a justification for it to then happen unnaturally. I accept that it happens naturally but I do not accept that it is necessarily good. It might be limited, but that it happens unnaturally is not necessarily extrapolated from that.

CHAIR—I would not have a farm if it happened naturally.

Mrs GALLUS—Do you believe that 20 metres is a sufficient buffer for the streams? In your expert opinion, would you feel that maybe 40 metres might be a preferable buffer?

Mr O'Shaughnessy—The code actually makes it quite clear that it is a minimum of 20. It is not the maximum; it is the minimum, and it goes way beyond that.

Mrs GALLUS—In your honest gut opinion would a minimum of 40 be better? Can you say, yes, you really think a minimum of 20 is sufficient?

Mr O'Shaughnessy—Frankly, it depends on the slope draining into the stream and the type of soil. In other words, there are times when a minimum of 20 metres would be enough, but there certainly are plenty of times when it would not be enough.

Mrs GALLUS—In the times when it is not enough, that minimum still holds? There are circumstances when the slope is such that 20 metres is not sufficient but that is still the minimum that has to be agreed to, acquiesced to?

Prof. Ferguson—Sure, except that we would expect that in applying the code of practice people would exercise their judgment to increase that in those cases.

Mrs GALLUS—I think it would be great if we could rely on people's judgment in applying codes of practice. Not everybody has a good code of practice. But there are people

who, despite the code of practice, will ignore it and go by the letter of the law and say that they are within the law.

Prof. Ferguson—It is understood that that is an important issue. But, at the same time, we are very reliant in people on the ground assessing what the situation is. You cannot have somebody literally tracking them every day as to whether they meet the requirements. What we can do is try and ensure that they are trained as far as possible to be able to exercise that judgment sensibly and to do so.

Mrs GALLUS—I do not want to take up any more time on this. Can I just finish that one question and I will pass back to you, Chair. Rather than just have a flat 20-metre minimum, could you specify that a minimum related to the slope of the land: a 20-metre minimum for a certain degree of slope, which would rise to 30 for a higher degree and up to 40 for a higher degree of slope? Would that be a possibility?

Mr O'Shaughnessy—The codes do contain those provisions.

Mrs GALLUS—So 20 metres is not a flat rate; it does change?

Mr O'Shaughnessy—Absolutely.

Mrs GALLUS—According to the slope?

Mr O'Shaughnessy—It changes according to soil type and slope. With a poorer soil type and a steeper slope that minimum increases dramatically.

Mrs GALLUS—Can I hand back to you, Chair. Can I ask some more questions later on?

CHAIR—Yes.

Dr LAWRENCE—Mr Chairman, since we are talking to the Institute of Foresters and it is an appropriate moment to question you, I wanted to follow up, first of all, about the extent to which your members are really in a position—it may be that they are not—firstly, to influence the actual conduct of these codes of practice and, secondly, to take any action in relation to failure of your members? A code of practice is only as good as the enforcement and monitoring of that code of practice, which is something that Chris was getting at too.

Prof. Ferguson—First of all, Mr Chairman, the codes of practice are state codes. The legislation and arrangements vary with the different states and some are still in the process of introducing them in a broader sense to go beyond public land. Western Australia would be a case in point; at the moment the code there applies only to public land. So there are big differences between states. We would wish to see that improved and extended to cover private land as well as public land and to formalise those codes in all states and there is a commitment to do so on the part of the states.

As to how they should be dealt with in terms of the sanctions, if you like, of transgressions, that is an important part of making the code work. There does have to be, in

our view, a proper auditing process in which there can be some follow through by an independent authority. The way that is structured may vary with different states and different institutional structures. But to have the capacity to conduct an independent audit of those issues so that the public can be assured that it is being handled appropriately I think is absolutely critical to the use of those codes.

Dr LAWRENCE—Yes, thank you for that. Can I just follow that up, Mr Chairman, with an observation and a question following it. You mentioned that in my own state there are regulations as well as codes of practice applying to public land. As a conscientious member of parliament I visited some of the coupes that had been cleared in the south-west of Western Australia—clear-felled, in fact. The irony of it was that we in government had set certain conditions particularly in relation to stream reserves in terms of buffer width, angle, felling across the streams, the inclusion of roads and so on. I spent half a day going through recently logged and not so recently logged areas and I have to say that I did not find one buffer that remotely approximated the levels that we had set. There were breaches all over the place. There were large logs felled across streams. This was in an area that fed into the deep river, which is the one remaining non-saline river in Western Australia.

This was on public land, managed by conservation and land management in Western Australia, according to criteria that had been strictly laid down and very publicly debated some four years previously and I found constant breaches. Under those circumstances you must have members who are employees of CALM, for instance, or like bodies. What consequences are there for foresters who stand by and allow this sort of breach? I was frankly stunned. I thought there might be one or two occasions but in every area I went to there was a breach of a major kind.

Prof. Ferguson—Obviously there will be some sanctions of a kind within the departmental structures and they will vary with those structures, but as far as the institute is concerned I think is the important thing.

Dr LAWRENCE—They denied it. That was what happened.

Prof. Ferguson—The reason we are going to a registration process, which will be a self-election of registration, is to try and encourage better standards of practice and adherence to codes of ethics in relation to those matters. With that, with our own registration process, there will be provision for auditing of the qualifications if people claim in relation to them and a requirement that they update periodically—it is a three-year rolling process. So we hope that that will contribute to ameliorating that problem you refer to. We do not condone any malpractices whatsoever in relation to the codes of forest practice. We are very concerned that they be upheld. Anything that can be done in developing systems which improve adherence would have our endorsement.

Dr LAWRENCE—One of the problems, of course, in this case—and with other states too, as I understand it—is the reluctance to allow public scrutiny. We now have what I would call draconian laws preventing the public from entering some of those places. It is designed for the purpose of keeping out protestors but it has the effect of denying scrutiny of practice, which is unsatisfactory. I will just leave that with you.

Mrs GALLUS—Can I ask for a clarification and relieve my own non-understanding?

CHAIR—Go ahead.

Mrs GALLUS—The code of practice for this, is this just an agreement? Is there any penalty for breaking this?

Prof. Ferguson—Yes. Of course, they vary from state to state. In Victoria there are penalties and in Tasmania there are penalties of various kinds. In Western Australia, because it is a departmental code, it is basically a departmental management issue. That will change, presumably, when it goes beyond the public land issue.

Mrs GALLUS—Taking Mrs Lawrence's point of view, in Victoria how would you actually go about reporting somebody and getting some penalties against somebody who had breached this?

Prof. Ferguson—There is a points system in the case of Victoria—demerit points, if you like—on a similar basis to drivers' licences. When you incur a sufficient lump of points the penalties vary according to the scale and nature of the transgression. When you reach that level you can be barred from working in the forest.

Mrs GALLUS—When you have killed a tenth of it then that is too many?

Prof. Ferguson—The number will vary to the type of transgression, of course. Some are relatively small transgressions and, like drivers' licences, there is some recognition of that. But there is provision for suspension in relation to serious transgressions.

Mrs GALLUS—Thank you.

Prof. Ferguson—In private forests also, there is a code of practice that extends to practices on private land.

Mrs VALE—Is it exercised very often?

Prof. Ferguson—If I may add to that: the problem with the private land is that the authority for administering those sanctions in the case of private land rests with local government authorities. At this stage they probably do not have the wherewithal to actually enforce those issues. We are working with them in terms of trials to try and develop systems which will cope with that.

Mr BARRESI—I just want to extend that in terms of a code for private landowners. I am not talking about your large foresters but your farmers and pastoral leaseholders, et cetera. Is there a code that is applied to them; if so, how is it enforced with the private individual?

Prof. Ferguson—For very small areas, no. The code does not apply to areas under 40 hectares, if my memory serves me right. For areas above that the code does apply.

Mr BARRESI—I notice that you comment in your submission about the excellent reforestation programs that are going on in Western Australia to reverse the salinity. We have heard a lot in recent times about how rapidly the salinity problem is increasing in WA. Carmen probably has the figures in terms of how much land is being lost per year, or whatever it may be. Can you point to any successes in WA perhaps that we should look at as a committee?

Prof. Ferguson—I think it is too early to be able to do that because these programs have really only just started to take shape. For the current year I think the program is something like 10,000 hectares, which is quite substantial. But it is going to take probably 20 years for us to see a major impact in terms of the water table. Pat can give us more detail on the time period and, of course, it does depend on the scale of concentration within a particular catchment to be able to measure that change.

Mr O'Shaughnessy—All this has occurred basically because we have cleared forest and put wheat on. Trees are evergreen and they evaporate the whole year. The water table is 20 to 30 metres down below the soil level, surface level. Ever since the trees have been cleared, in many parts of Australia the water level has been rising owing to the fact that the evapotranspiration is less. The idea is that trees be put back so that the water table again starts to recede. The only catch being, when you put trees back on a water table that is still within a metre of the surface, there are major problems in making sure that you do not have a zone of salt increase just at water table level. You have to make sure it keeps going, that you flush through salts occasionally out of that water table, out of that immediate surface soil, and keep flushing the salt down.

So it is going to take some very careful and detailed managing to bring this about. Having caused the problem by 60 years of clearing, you cannot reverse it within 10 years of planting. It is a long-term program and I think we have yet to develop systems to bring this about.

Prof. Ferguson—There are some studies that have been done in Victoria—at Shepparton and in related areas—which do provide some evidence of the impact. There may well be some in Western Australia, I am just not aware of them.

Dr LAWRENCE—In terms of the total area affected, this is quite a small program. It may sound like a lot of hectares but it is still a long way short of significant.

Mr BARRESI—In point 5 of your policy statement on your website, you state:

Where soil-stored salt is a potential problem, standard density should only be manipulated within a range which will not lead to excessive ground water table rise and outflow.

What does that mean?

Mr O'Shaughnessy—That means basically that you try and keep an intact forest cover. You manipulate it marginally so that evapotranspiration still goes on so that water comes out of the soil. In other words, a total clearing would lead to a rise. So what it is saying is that

you have a minor degree of manipulation so that water table still either sits at the current level or falls.

Mr BARRESI—Thank you.

Mrs VALE—On page 1 of your policy statement you state:

Water quality calls for forest management activities to be within a natural range of environments to be small on a regional scale and to be reversible over time.

How do you decide to the degree that it has been reversed sufficiently? When you talk about ‘reversible over time’—and you were speaking earlier about salination—what sort of time frames are you looking at?

Prof. Ferguson—I think the time frame is going to vary with the species and area because you have tremendous differences and disparities in growth rates across our forests. The inland woodlands are very slow growing forests. They are very important forests but they are very slow growing compared to the coastal forests in which you have high rainfalls. So there are orders of magnitude difference in terms of time scales from, say, in the high rainfall forest where you might be dealing with rotations of, say, mountain ash of 80 to 100 years in Victoria or karri of similar values in Western Australia, to the inland woodlands which might be 200 to 300 years.

Mrs VALE—This is a huge job, isn't it?

Prof. Ferguson—Yes.

Mrs VALE—So when you are considering ‘reversible over time’ and the criteria you are using, are you anticipating that that will be when you have the indigenous trees replaced to full growth?

Prof. Ferguson—In general the principles are that we do not want to see the species mix changed. That does not mean to say that the minute you disturb the forest you are going to have the same species mix as before because as forests grow different species compete differentially.

Mrs VALE—Different evolutionary process?

Prof. Ferguson—Some drop out along the way and some stay with it. But your aim should be, in our view, to try and reflect the same sort of composition that was present in the mature forest. After all, that evolved over a long period of time. It presumably has some real relationship to the site, the soils, the climate et cetera.

Mrs VALE—You also spoke about your code of practice and how you actually had set that code for public areas of forestry and the difficulty that Mrs Lawrence has seen in trying even to implement that. Do you have a great success of enforcement of those codes of practice? Have you had many successful prosecutions, if you like?

Prof. Ferguson—I cannot give you chapter and verse on actual numbers, but I could certainly get those for you and supply them. There have been people who have been excluded in Victoria. It is more likely to be in the tens than the hundreds or thousands.

Mrs VALE—I was just trying to see a mindset to actually impose the code.

Prof. Ferguson—There are also some figures certainly available for Tasmania of similar ilk in which there have been numbers of people who have been excluded from further practice, either permanently or for a period.

Mrs VALE—Given the difficulty of imposing the correct practices on public land, do you have any suggestions at all as to how we could educate private landholders?

Prof. Ferguson—That is something we have had discussions about—wearing another hat actually—but we believe that there is a need for a community awareness, a landowner awareness program. My perception—and this is something that the institute really has not addressed specifically recently—it that landowner awareness in relation to the code of practice on private land in Victoria, for example, is relatively low once you get outside the big forest owners. The small individual landowners, who might have 100 hectares or something of that order, sometimes even going up to a couple of thousand hectares, are probably relatively unaware of the code and something needs to be done in terms of educating them on the code. That is a serious issue that needs to be addressed.

Mrs VALE—Probably also how it actually can profit them in the long term to abide by the code?

Prof. Ferguson—Yes, it should be part of an overall package in relation to whole farming.

Mrs VALE—An education program.

Prof. Ferguson—Planning and management as to what benefits it might confer—not just in relation to existing forest but what additionally might be done in terms of changing other practices.

Mrs VALE—Good. Thanks, Mr Ferguson.

Mr O'Shaughnessy—It might be worthwhile just commenting that the Victorian Forest Service—and this is only an example, others might do something like it—investigate, on average, about 20 per cent of the coupes in detail at the end of each logging season for breaches which are then investigated and reported on.

Mrs VALE—That is great.

Mr JENKINS—It is very early days in this inquiry but one of the things that struck me about this area is that it seems to be very difficult to say that there is a national approach. Indeed, perhaps it is a difficult area to decide at what level there should be a national approach. One of the things that you have done today is to perhaps identify some of the

reasons for that in that in your particular field you have different types of forests that will lead to a different approach.

The other aspect about this area is that we are talking about the management of catchments where there are so many uses—agriculture, forest, urban, mining. But at the end of the day, if the Commonwealth is going to ensure and drive a role in this, we have to identify areas where there should be a national approach. Can you suggest the integral things that we should be driving as part of a national approach to catchment management?

Prof. Ferguson—I think the opportunity arises to extend the sort of processes involved in the regional forest agreements to arrangements between the Commonwealth and the states so that the Commonwealth can exercise some push, if you like, on the states to adopt the principles involved in sound catchment management and to see that they are built into the processes they adopt in terms of codes of practice and planning procedures. We must bear in mind that those regional forest agreements do not cover all the forest area; they only cover a fairly small proportion of it. There are vast areas that are not covered under those arrangements and where I think the Commonwealth might well wish to take a particular stance in encouraging improvements in practices according to those principles.

Mr O'Shaughnessy—I do not have a lot to add to that except that what you need to do in a particular area to prevent water quality degradation depends on the forest type and the climate. So general rules can only be that at a national level, and how to implement them at a state level depends on detail. Because the Institute of Foresters is a professional body—it is not a body comprising management authorities, it is individual professionals—all it can do is to set out, as we do in our policy, *Forest Management, Water Quality*, what is needed to ensure that water quality is maintained at a national level. Certainly that means the proper implementation of codes of practice for a start.

Mr JENKINS—Another area that I am interested in getting comment on is research—the adequacy of the research and the ability of that research to be turned into action.

Mr O'Shaughnessy—Well, one very successful process has been the Cooperative Research Centre for Catchment Hydrology. That has been working for seven years. It has just had its charter renewed for another seven. That has brought together people who were working for individual management authorities and departments. It is a cross-management authority, so there has been good cross-pollination of ideas and the end result has been excellent. As we have just had another seven years, it means there will be 14 years of progress. I think it is a model for the CRC approach. That is a personal view. It is the area that I am involved in so I am enamoured of the way they have gone about their business.

Prof. Ferguson—I would certainly endorse the importance of that organisation. I think it has done a good job in the areas in which it works. However, I think there is still a gap in the array in that it has tended to focus on the higher rainfall areas and less perhaps, until very recently, on the Murray-Darling Basin and the south-west of Western Australia salinity catchments or saline affected catchments.

I would particularly like to stress that we have had some experience in trying to form collaboratives to pursue research in relation to reforestation in those areas through a

collaborative called the Trees for Profit. It was a collaborative between my university, CSIRO, State Forest New South Wales, Charles Sturt University and some other bodies which escape me at the moment. That worked as a collaborative to look at the possibility of using trees for commercial purposes in those saline affected catchments.

We found it very difficult to get research funding from research bodies. I do not think that was a reflection on the quality of the research proposals or the researchers. The R&D corporations basically were very chary of getting involved in that area at that time. Whether that is still the case, I do not know because that was two or three years ago, but it seems to me that it is an area that needs more push in terms of the inland catchments—not the major catchments for domestic purposes around the coastal areas. In terms of the inland, broad scale catchments, there is a need for more funding of research in those areas.

Mr JENKINS—Just a final question about involvement with community. Through the RFA process information dissemination was supposed to go through to Landcare groups and community groups. We have had a lot of comment about the way in which the Landcare movement is in transition, some as a result of coming towards the end of their code of Landcare, some as a result of the funding mechanism that the National Heritage Trust brings. Are you in a position to comment about where you think that sort of community edge is going?

Prof. Ferguson—I do not know whether Pat would like to comment but I guess the problem that I see in relation to the Landcare issues is not the work that it is doing but that some of the groups in Landcare have got into what seems to me to be a permanent grant seeking mode. I think we have to try and find some ways of broadening that out and getting out of that mould because we cannot necessarily see them being supported forever and a day in that mode. There has to be some self-generating process that is built into it that at least leverages further the Commonwealth subsidies. That is one of the reasons for my earlier reference to the desirability of leveraging Commonwealth funds. We have an enormous area to try and cover. I do not want to denigrate the Landcare work because I think it is terrific. But we have enormous areas which we have to try and address in terms of revegetation and reforestation, and we have to try and make the most use of those funds that we can. The only way that I can figure is to try and leverage as much as possible by commercial opportunities on top of the subsidies.

CHAIR—We are just about out of time.

Mr BARRESI—I have just a quick request for information. Mr Ferguson, you mentioned salinity credits. Is your Institute in a position to provide us with a more detailed proposal about how they would work?

Prof. Ferguson—I would be happy to.

Mr BARRESI—I understand that one of the group has raised this as an issue to the committee. Is there some sort of position paper on it?

Prof. Ferguson—If you could give me some indication of the time scale, I would be happy to respond.

CHAIR—We will not be reporting until late next year, I would say.

Prof. Ferguson—Okay, no problem.

Mrs GALLUS—Just a quick question. We have not mentioned today either the effect of damming on the streams. I know you are a forester, but I am sure you do have some sort of attitude towards this—stopping the fast flowing of streams. Also I am interested in the role of long rooted native grasses. Do you want to just briefly comment on that, or is it not part of what you do look at?

Mr O’Shaughnessy—It is certainly important. But we are foresters and whether a stream is dammed, how much is taken out and so on are more engineering matters. But we certainly would be interested in maintaining a cover on a catchment which provides high quality water. From the ideal point of view, one of the best catchments is one which is totally forested. So I guess from the forester’s point of view, we would like to see that. As to the amount of water that is taken out, this is probably not directly in the bailiwick of the Institute of Foresters.

Prof. Ferguson—Well, in one sense it is, if I may draw a particular example which is of some importance. We have been working with the Murray-Darling Basin for some years now on trying to develop an approach on the management of the red gum forests. The release of water for purposes other than growing trees often is at the wrong time for growing trees or ensuring their health and maintenance. It is a matter of concern to the institute and we are pleased that the Murray-Darling Basin Committee has been willing in recent times to form a committee with representation from us on it to address that issue. But it is quite a serious problem because if it is neglected then those red gum forests are really at risk.

Mr O’Shaughnessy—I would certainly support the chairman there.

Mrs GALLUS—Just briefly: Is there any position on the long rooted native grasses at all?

Prof. Ferguson—In principle I guess where they can be used to reduce water tables, in terms of their capacity to tap water tables, we would support their use rather than other grasses but, of course, we would prefer trees.

CHAIR—Thank you. We have to move on. Unfortunately, time has got away on us. Thank you very much for your evidence.

[10.56 a.m.]

FORD, Mr Robert John, National Convenor, Environment & Catchment Management Interest Group, Australia Water and Wastewater Association

McRAE, Mr Brian, Technical Director, Australian Water and Wastewater Association

CHAIR—I call the representatives of the Australian Water and Wastewater Association. We have received your submission. Would you like to make an opening statement?

Mr Ford—Thank you, Mr Chairman, I will start off and Brian will conclude. The association again is similar to the foresters—a professional association mainly established to provide cross-disciplinary fertilisation between a number of different specialist interest groups or specialist professions working in the water area. We have been established for about 35 years, mainly involved in major water supply and irrigation for people working in those major areas.

The emphasis we would really like to bring to this committee is that land and water are assets that really have to be managed together. All too often in the past decisions have been made by land managers who have had no understanding of the impact of those decisions on the quality of water. In many cases, those impacts are quite remote from where the land management decisions have been made, or from the land for which the decisions have been made. Therefore, we strongly support the whole concept of integrated management of catchments. The quality, the quantity and the flow regime, as you have probably heard from the previous submission, is certainly dependent upon the use of land, or its abuse. The wellbeing of Australia in the future, we believe, is utterly dependent upon the sustainable use of land and water. The problems that are now appearing in terms of salinity, algal blooms, all those sorts of issues, are simply the results of various changes in land use over the last 100 years.

The major challenge, we would see, is very much to deal with and manage the perceptions of communities and various authorities, particularly planning authorities. Everybody impacts on a catchment, we all live in catchments. But it becomes extraordinarily difficult to convince any particular landowner that what they do matters in that the impact of one small individual change is negligible but it is the cumulative impact that has the major, devastating effect. It is extraordinarily difficult to convince a local municipality, for example, not to issue a permit for a house on the bank of stream. We find ourselves continually arguing that that should not occur, that it is inappropriate. We find ourselves appearing before planning appeal panels trying to mount an argument on what the impact will be. Clearly, it will have negligible impact but it is the cumulative effect and the precedent that is established—that 30 or 40 or 50 or 60 houses down the track you will have a problem and then it is too late.

It is difficult to convince the builder that he should not be cleaning his barrow out in the street with water that goes down the gutter. The impact is negligible but all the builders do it, all the building sites generate polluted run off. It is extraordinarily difficult to convince that one builder not to do it. So we suggest there really is a need to somehow or other develop strategies to change community cultures, develop support within the community to

put peer pressure on other people because it is clearly impossible to police people's activities across the whole catchment.

The benefits are quite high and if you wish I can certainly give examples in the Ballarat region where, by getting involved in catchment management, we have saved quite large amounts of money for the Ballarat community in terms of water treatment costs.

I think the key points we would like to make are: the need for a strategy which targets change of culture; the need to identify and grow champions for this area; and the need to support groups that can demonstrate benefits, so that once those benefits are demonstrated others will come along and adopt those principles. But certainly that needs policy, it needs leadership and very much leadership by example at all levels of government. One of the most destructive things, I guess, is to see a local, federal or state government contractor doing then opposite of what he should be doing. We tell the people, 'You should be doing this.' They look over the road and see the contractor doing quite the opposite. So quite clearly there is a need for example at all levels of government.

Finance is important but I think that is basically secondary to establishing our practices and the problem certainly will not be solved by simply throwing money at it. We must target that money very carefully. I think Brian has some suggestions, Mr Chairman.

Mr McRae—I will give you a bit of my background. Before the AWWA, I was with Warringah Council as the team leader for catchment management there. It is a bit of an urban suburban council but with a nice healthy share of parkland in the catchment, fortunately. Before that I spent about seven years at the City of Los Angeles Bureau of Engineering, which is quite an urban catchment, and my background is in the environmental arena. I hope you are not going to hold that against me!

I wanted to mention that because I suppose it colours my approach to the issue a bit. In this submission we tried to address in particular the role of the federal government because we felt perhaps that was what the committee was particularly interested in. Even in just looking at the question, I find I am missing some information that I would like to have. I do not think we have a good idea of what we spend on catchment management. What are we actually spending? I certainly saw this in New South Wales at Warringah Council and if I sort of expand it, and try and look at it on the scale of Australia nationally, it becomes more problematic. There are two bits to it, I suppose. You have a traditional engineering based approach which you can adopt, an end of the pipe solution, if you will, such as gross pollutant traps or something like that. Then you can have the activities that you actually carry out within the catchment—perhaps more a Landcare type of scale, more on a preventative scale and more on a source prevention rather than a treatment type approach.

Where are we spending money? I think that is another interesting question, once we even have an idea of what we are spending. Urban versus rural—again, quite a different problem. In an urban area where you have a lot of streets and roads development going on, the types of pollutants that you generate are quite different. What that water is for and where it is going are often different. Most folks live on the coast within Australia so the ocean ends up often being the drainage for the urban areas, which is quite different from what you have in an inland situation and so the needs are different.

What are our goals and what do we want out of it? Certainly from the perspective of AWWA, in looking at this issue we do not think that the source water, the potable water aspect of a catchment is something that has been very high on a priority agenda for catchment management. This is a bit intuitive—I will not tell you we know for sure—but I think it is lower than it should be. These are interesting questions just to have the answer to—whether what we are doing is working or not; whether we have an idea of where we want to get to; and even whether it is worth doing or whether there is a better way to get it done. Are we really getting the value out of it or is there an alternative? Again, often you have the end of the pipe engineering solution or you have what you do up in the catchment. We go a bit on the wisdom that an ounce of prevention is worth a pound of cure but I think it probably holds true partially here. But, again, there is a bit of intuition there so it is another open-ended question.

We mentioned in our submission that we had recently implemented national interest groups within the association. Bob mentioned that we have been around a while. We have pretty much got an urban focus, it is fair to say, and we have an engineering based focus—people running water and wastewater treatment plants. We put out 17 different national interest groups for people to nominate membership of on our membership renewals and now that we have tallied all that up, the environment and catchment management group had the largest number of nominees for it—larger than either water supply or wastewater. I found that quite fascinating considering what we thought our membership base was and where the interests are. So it is an issue, I suppose, that is timely and crosses a lot of agendas.

CHAIR—It is interesting that you come from a council area because we can start to talk about some of the nuts and bolts of the particular issues in those areas, particularly that Warringah area. From my previous life in the state government I recall that we had great problems up in that area because it has a very high horse population—probably around the highest in the state. The people love to ride their horses through the national park and we had a big erosion problem. Of course, added to that, I suppose, in the city we have the problem with pets, particularly dogs, and the effect they have on wastewater and stormwater in particular. I know the council doesn't control the national park but you would be aware of the problem we have there and politically it was a problem that the local member could not come to terms with. So how do we get over these political problems and, on the other hand, the wastewater problems, in the city where, if you dare to look at the little doggy and say that he is a problem, then you are going to have a political issue?

Mr McRae—Warringah has done some interesting things. Before I came over here, when I was reading up for my job interview, I learnt that dung beetles had been introduced into the parks to address the dog faeces problem. As far as I know, that has been a reasonably successful experiment. So I suppose that is one alternative, looking to some types of natural controls.

On the horse question, the *Manly Daily*, which is the local paper in the Warringah area, has for the last couple of months been full of the controversy over the policy that introduced what is basically the equivalent of a feedbag—except that it goes on the other end of the horse—horse diapers. You are quite correct—that is not very popular amongst a lot of the constituency.

I suppose that what it takes is having an understanding of the issue in terms of the cost and the alternative solutions, and convincing and educating both the larger populace and the members. Ultimately, though, a lot of our decisions end up being political. Politicians like to respond to their constituents. So if you have a large constituency out there that supports an issue, it is much easier for a politician to take a stand on it, even if there is a minority that is opposed to it. So I think the course to follow is developing a better understanding academically and then being able to instil that into people where it creates a sense of value and a sense of awareness. It is a long row to hoe.

CHAIR—There is a cost to everything. There are no free lunches. While we can legislate and local government can regulate, the added cost goes onto the cost of rates or taxes. We then have the problem of driving people out of those areas into areas like mine, where they just exist in the bush with a pit toilet, which also has its effects on water quality. So it is a matter of trying to get something that is sensible but also economically viable that can address these issues. Do you think that we are looking probably at the big cost alternatives of trying to address some of these issues instead of being creative about how we go about solving those problems?

Mr McRae—I think in some areas we do not have answers and we perhaps do need to go about the big cost of trying to figure it out. I think in a lot of other areas the answers may be out there already and the information sharing is perhaps not as good as it should be. What I find within Australia, comparing it to the United States—and there are a lot of things wrong there; I am certainly not elevating it on a platform—is that the federal government has much of a presence on water issues here. Constitutionally, quite interestingly, it is not that different. It is a matter of evolutionary history really and not the constitutional law itself. But because of that there is almost an information vacuum often. Catchment management is a good example. It is something where the federal government led the initiative by setting forth policy and the states then picked it up and implemented it and local government picked it up and implemented it. So it is a wonderful laboratory; a great experiment; all these good things going on.

The recycling of the information back again to evaluate the experiment and figure out what worked, what did not work, what could be applied somewhere else successfully, I do not think that loop always gets completed very effectively. So that may be an opportunity to spend some dollars where there could be a good payoff. I think that this inquiry, hopefully, is a process which has exactly the opportunity to do that; to collect a large body of knowledge and put it in one place and, hopefully, trickle back.

CHAIR—The issue of wastewater has certainly been elevated in recent years. How successful have we been in dealing with that, with the re-use of wastewater? Are we being successful in any way with that?

Mr Ford—I think, Mr Chairman, we have been. There are probably two areas of wastewater: the traditional sort of sewage disposal techniques and what has become an increasing problem—urban stormwater, or stormwater from urban areas. I think the state EPAs and similar bodies have been fairly successful in improving dramatically the quality of wastewater, of sewage type discharges. Most sewerage plants now either treat to tertiary levels or discharge to land and I think there is a diminishing return for the money you spend.

To move to the next step becomes extraordinarily expensive for decreasing benefits. That is of particular concern when you see very little action in the stormwater waste area. So I think in terms of sewage effluent that is pretty much under control and there are pretty tight regulations. The community expects authorities to do the right thing and if they do not there are various groups that will fairly actively put pressure on them.

In terms of stormwater, I think it is a different question and I think it is an area there where we need to, I guess, provide some leadership and maybe provide some support for various groups or municipalities or whoever to start dealing with the source issues. Certainly in new developments there is a need for some form of planning controls to ensure that if you are going to build a shopping centre, you know there is going to be litter around it. Then as part of your application for that development, how are you going to control that? It is clearly much easier to deal with that at that site than let it get into the system and then try and deal with it further down the stormwater system or even into the creek.

CHAIR—One last question and I will switch to the bush. I am assuming that the majority of your members are probably city based. I may be right, I may be wrong, you can comment on that. But we accept, and I think you made the comment in your submission, that land uses in the past have been more or less aimed at land use and not at the environment. People did not realise the problems that were going on and now we have a problem. Of course, the economic environment in the bush has changed. If this had occurred in the heyday of wool or whatever, it would probably be quite different. But how would the city based ratepayer or taxpayer react to their paying for some of the problems that have now been shown up in rural Australia?

Mr Ford—That is an interesting question. You may not be aware of the catchment levies that Victoria were running.

CHAIR—Bruce is not here, but he knows all about it.

Mr Ford—Unfortunately, I think my personal view is THAT they were excellent, not so much for the dollars they raised but simply for the awareness that they created. But the government has decided there is a policy not to do that and that is life. I have a day job. I work for a regional water authority. We spend maybe \$50,000 a year in our water supply catchments—because we have open catchments—providing trees and providing fencing materials for farmers who want to do things along the streams. We are leveraging off what they want to spend by just helping them provide a few more dollars to help them do things. Our objective very much is to improve water quality coming into our domestic water supply, but we are finding more and more landowners are realising there are some benefits for them. Once we get a few of those doing things, the farmer looks over the fence and says, ‘Gee, that’s probably useful for me.’

CHAIR—Extension, if you like—

Mr Ford—Yes, and we actually put \$50,000 a year out of our income into that. The spinoff has been, I believe, very good. We have just gone through a process of calling tenders to build and operate water treatment plants for Ballarat. The Ballarat catchments lie between Ballarat and Melbourne. There is a major rail line, a commuter rail line and a

freeway passing through those catchments. So, even though it is rich agricultural land, there is enormous pressure to chop it up and sell it off into small blocks or whatever. We recognised that about 20 years ago as being a risk and we started working in the planning area trying to influence the municipal planning scheme to recognise it as a catchment. Council had some difficulty because their objectives were development, naturally, and after something like 60 visits to the relevant planning appeals board we managed to get the planning scheme changed to recognise that it is a catchment, requiring a 40-hectare type development, so keep it as rural. Once we had achieved that, basically we solved the planning problem. We then started putting our money into extension type work, as you express it.

We then called tenders for water treatment plants, we called for expression of interest, and many of the international firms applied. Most of them indicated they were going to build a conventional water treatment plant. Now, while this was going on, the Sydney incident occurred and my board got quite nervous. What if that happened in our catchment? Would these new treatment plants deal with that? We went back to the people tendering, or putting in expressions of interest, and the major ones all said, 'Look, if you continue what you're doing in a catchment then we're quite happy to carry the risk that the treatment plant will be adequate.' My board said, 'That's fine, but how much would it cost to go the next step to have a higher quality plant, to put in membrane filtration or ozone type disinfection?' We asked three or four of the tenderers to give us a ballpark figure if we decided to go down that path. They indicated it would add around \$10 million to Ballarat's cost of the treatment plant, plus somewhere between \$600,000 and \$900,000 a year to run it. So we are putting in \$50,000 a year. We have probably saved \$10 million in capital plus \$600,000 to \$900,000 running costs. We think that is a pretty good investment.

CHAIR—Good investment, yes.

Mr Ford—It is a long-term process. We have managed to get something like 40 kilometres of stream fenced over the last 15 years and many of the landowners in the area are coming around. They were very antagonistic initially. Here was the water board telling them how to manage their farms. Most of the genuine landowners or farmers—those who are not interested in eventually selling it off for hobby farms, but want to continue farming—genuinely believe that had we not come along that area would have disappeared into a series of hobby farms and those rich volcanic soils would have been gone. But nobody else was doing it. The Department of Agriculture said, 'Oh, well, that's what's going to happen.' The local council said, 'We want development.' We took a stand and I guess we had the support of the community. Also I was fortunate in that I had a fairly strong board that was willing to stand up and support that against quite a bit of criticism and political pressure, from both local and state government.

CHAIR—The departments of agriculture have been withdrawn from that.

Mr Ford—That is right, they just do not exist any more.

Mr McRae—Mr Chair, could I just add to that: one of the difficulties is that the natural boundaries of the catchments do not often coincide with the political jurisdictional boundaries.

CHAIR—Yes. That's local government you are talking about at the moment?

Mr McRae—Well, not just local government. Let us ask a question in relation to the water authorities, the equivalent of local government in three of the states but not in the other five—and this is a question that I do not think we have an answer to either. What is the overlap between jurisdictional boundaries of catchment authorities and the boundary of the catchment which the water authority is actually pulling its water from? In Bob's particular case, he is fortunate in that there is a pretty good match there and his catchment has a good overlap with his jurisdictional area and his interest area. I do not know the answer but it would be very interesting to know how that matches up. I think there is a lot of opportunity to leverage funds from water districts. These are rates that people are already paying and there are quite substantial transfers that are often made from water authorities back to the government entity. This at least is an area where you can clearly say that there is a relationship between the rates that you pay and what is being done with the rates. Whereas often perhaps in a transfer case that nexus between the two is not so clear.

Dr LAWRENCE—You do talk a little about Landcare groups, their focus on stream reserves and so on and a lot of the work they are doing. I think you are recommending that they might be extended so that they do not see it quite as narrowly focused. My question is a little different from that though and that is: how successful, in your view, from the perspective of your members, has the Landcare Natural Heritage Trust's funding been for water quality purposes? My gut feeling—and it is not much more than that—is that there is a lot of ad hockery about it; that when you are talking about integrated planning and catchment areas a lot of that money has not been directed toward a master plan, if you like, and it has been somewhat a matter of chance whether it ends up benefiting, for instance, water quality. I know that is not its sole objective but it certainly could be one of the objectives and I suspect that those funds could be better coordinated and better integrated with catchment management.

Mr McRae—I am going to give you a quick theoretical talk and let Bob give you some practical experience. The community involvement is very, very important and essential and it goes back to the education and the awareness issue. What you lose though, unfortunately, is that big picture perspective. The question of priorities is something that needs to be applied not only on a catchment scale or a jurisdictional scale but, I suppose, on the overall scheme. That is something that we do not necessarily have a good picture of. It would be nice to have a bit of a report card to be able to say, 'This is the relative health of all of our catchments within Australia.' If that is the case then maybe we need to make sure there is a reasonable base level of funding going everywhere but perhaps there are some areas where we would like to take those special big pots of money, like NHT, and direct them to in particular because there is a justification for it.

Dr LAWRENCE—Yes I think they are essentially application driven responses. They are not based on the assessment of priority.

Mr Ford—Yes, I think that is quite correct. Certainly they were application driven. 'Here's some money. What have you got?' People looked in their bottom drawers to see what projects they had and I guess I lament that in that we are spending quite a large amount of our money, and once it is gone it is gone. Hopefully, we are looking for long

term benefits. It seems to me, as we said in our submission, we are looking to change community attitudes, not necessarily build public works. At the end of the day, if the government comes along and builds something, nobody owns it, nobody maintains it. They should come back and fix it again. That is what we are trying to do in our area. We are trying to say to farmers, 'If you want to do something we'll help you. If you put some blood, sweat and tears into it, you have some ownership of it and we'll help.' I guess that is very supportive and so we should be trying to identify those champions, those groups.

But then, I think as Brian said, we have done some of these things. Let us find out what worked, what did not work. Let us get some feedback to policy level and perhaps look at the next round of strategies. What did work? So we should put our money into the successful ones and learn what did not work.

Mrs GALLUS—Earlier on the Chairman talked about dog faeces and the problem that has for stormwater. I mean, things like that, are they not relatively easy to solve? I was in Berlin recently and they have dogs everywhere. They take them on the train, they take them into restaurants—all the things we are not allowed to do with our dogs. Yet I never saw any dog shit on the streets and I walked quite extensively there. If local government authorities were willing to say, 'Okay, \$500 if your dog shits on the street and you do not pick it up', I think a lot more people would be carrying plastic bags and cleaning it up. Now, admittedly, that is only one part of the problem but the Chairman mentioned it and it is an important part when you get to these urban areas.

Mr Ford—I think you are quite right. I own a dog and if someone said to me, 'Your dog has polluted the public area' then I should be responsible for fixing it. Now, maybe I am different from other people—I do not know whether that attitude pervades through the whole community. That might be the way to go but whether it is politically acceptable, I do not know. The same applies with the example I raised of the builder who tips his motor barrow out in the gutter. He does not look over his shoulder and do it surreptitiously. He does it quite openly because it is the accepted thing. So it is incremental—all the small elements of pollution add up and as a community we seem to tolerate it.

Mrs GALLUS—There is no cost to it. You just say, 'Okay, that is the fine. If you want a dog and you want to take it out, fine, but you pay the penalty if you do not clean up after it.'

Mr Ford—That is right.

Mrs GALLUS—I cannot see why we are so damn reluctant to make those political decisions. But I do not think we are going to debate that here today.

Mr McRae—I will give you a bit of a different response, I suppose. One observation I would make is that Australians are not Germans and there is a cultural difference there. That may or may not play part of it.

Mrs GALLUS—I will tell you what: if you are going to be fined \$500 it does not matter what nationality you are! Australians do not like paying fines any more than any other nationality.

Mr JENKINS—For the council that brings it in, it is your last term!

Mr McRae—Again, coming from a local council background, I would point out that we have fines in New South Wales for builders for polluting. I can tell you that the enforcement of that fell to local councils. It was often the building inspectors and the surveyors, who went out on the site. It was not an area they were familiar with or comfortable in dealing with. The pathway to prosecution was very expensive and very time consuming and the fines did not always trickle back to local government. So the message there was go out and spend your personnel time on something that may cost you more than you are going to get in benefit, especially since the benefits do not even come back to you. It can work, but the concept itself is not enough; it is a matter of the approach and how it is implemented.

Mrs GALLUS—If the local government is imposing the fines, the money goes back to that local government. Not that I would hope that many people are going to be willing to take the chance of incurring the fine. I also suspect there are enough people out there who do not like walking in dog shit and who will report someone whose dog fouls the public path—and I say that as a dog owner.

Another thing I want to ask you about is Memtech. A long time ago there was a lot of talk about Memtech. It was going to be one of the big answers to this problem because they could actually produce potable water out of effluent. That seemed to be one of the big hopes for the future. I understand Memtech is now quite successful overseas. It was taken over by an overseas firm and is doing a lot overseas. But, although it was originally an Australian firm, nothing was ever really done with the technology here. Can you update me very briefly on that?

Mr Ford—I could give a bit of information to you. Memtech was certainly taken over by US Filter which has since been taken over by one of the French water companies. We certainly looked at the process for Ballarat. It was more expensive and all the tenderers indicated that, as long as we kept our catchment management practices in place, it wasn't appropriate. The plants we are designing will allow that sort of technology to be retrofitted if necessary but we have not done so. The authority I work for built a small Memtech plant for a little town called Lexton out of Ballarat about five years ago to get some experience with that particular technology. Basically we found it worked well in certain circumstances. It worked well if it was dealing with salinity or mud or those sorts of things. But we had an algal bloom and you can imagine what happened to the fine filters when we got a whole lot of algae coming down. They just blocked up completely.

Mrs GALLUS—I thought that as part of the Memtech process they had this reverse osmosis system so that they got rid of all that?

Mr Ford—Basically the process is a very fine membrane that filters things through.

Mrs GALLUS—Yes.

Mr Ford—Then every now and again a burst of air clears it. But if you have water with a large amount of algae, and the particular algae we had was a siliceous material that looks like sort of a starfish with spikes on it. It got caught in the membrane and we had terrible

trouble. Now, had we been smarter and had our laboratory people picked up the fact that these things were beginning to develop, we probably should have dosed the reservoir with something to knock it off earlier.

Mrs GALLUS—Before you put it through the membrane?

Mr Ford—Before we put it through the plant. So our practices have now changed. I think it is an emerging technology. Costs are coming down and I think there is a big plant about to go in for Bendigo.

CHAIR—Sydney Water put one in. Didn't they do some experimenting with it?

Mr Ford—Sydney did a lot of experimenting, yes. I do not know much about that one. Brian?

Mr McRae—Yes, I do not know if they ran a Memtech plant or not—

Mrs GALLUS—Wasn't it something to do with Cronulla?

CHAIR—At one stage I think Sydney Water Board did try something. But what the result was, Chris, I do not know.

Mr Ford—The big cost with Memtech basically is the life of the membranes and what sort of pollutants may foul the membranes. You need to replace those membranes at periods of time, which is a major capital cost every five or 10 years or whatever it may be. At this stage, if the source water can be kept reasonably clean, it is not cost competitive with the more traditional plants. But I think the costs of those things are coming down and probably more research will make a difference.

Mrs GALLUS—A final question: it is not cost competitive, but is the end product better than what we are getting at present by the techniques we are using at the moment? I notice that Brian is nodding.

Mr Ford—It depends on the quality you want. If the conventional process can give you water that meets the Australian drinking water guidelines then why would you spend more? It is certainly better at managing certain risks that may happen, certain pollutants that may get into the water supply. The small enough membranes will actually filter out the larger protozoans, the thing that caused the worry in Sydney. So the question becomes cost versus risk versus managing the risk, I guess.

Mr McRae—Yes, I think a lot of this comes down to economics and dollars. You made an observation that this is used elsewhere and if you look at the drinking water regulations in the United States you will see that they are much more restrictive than they are here. But that does not necessarily mean that you are always getting a better quality of water as a consumer at the end of the pipe. It means that a lot of dollars are being spent on testing and monitoring. Whether that is worthwhile and effective is another question. But even though Australia is the driest inhabited continent, for the most part where the people are there is plentiful water. So we are not water short as far as urban centres and where people live are

concerned. From a water quality perspective that is pretty much the focus: people consuming and drinking it. Agriculture has needs but quantity becomes much more important than quality in many respects—certainly when you are talking about filtration and treatment on that level.

So it is a question of how much you want to pay for it. It will produce a better quality water. Even if you look at the water that goes to the urban areas, which is only running about 10 to 15 per cent of the total water consumption across Australia, the amount that actually gets consumed is very small—less than 10 per cent on a household scale. Most of it is used in flushing toilets, showering and bathing and watering the lawn.

Mrs GALLUS—I take your point but I was interested in it.

Mrs VALE—I really would like to congratulate the association on your proactive management in encouraging farmers in relation to erosion and growth. We had the opportunity in Queensland to see some benefits of that particular effect. The farmer who was actually doing that and putting it in place with the help of the local catchment management group was very enthusiastic himself. It is really great to see you being proactive on that.

Mr Ford—We see it as terribly important because once you get one convert, if you like, and he gets support and does not get white-anted by actions of other authorities, be they state, federal or local, others will follow. If he gets that sort of support he will get a few other converts.

Mrs VALE—In this particular case the farmer actually came down to meet the committee and very proudly showed us exactly what he had been doing. It was very impressive—especially saving the banks and the erosion on his streams.

Mr Ford—It is a long, slow road.

Mrs VALE—Yes, I know.

Mr JENKINS—A quick comment about our research efforts. You spoke of the need for a report card which indicates that baseline data is a bit dicey. It is not only in the technical matters to do with water management and water quality, but also the tie in with the economics. Obviously some of the water authorities have some very interesting case studies of the economics of doing things at source rather than at end of pipe. Perhaps you could give us a general comment about the whole range of research effort.

Mr McRae—Something that I stressed quite a bit in the submission was this mismatch of jurisdictions, natural and political. The sort of ideal scenario, I suppose, is 'Let's redraw the political lines and make them match up with the natural boundaries and then we will not have to worry'—that probably would not go over very well as an idea. So the alternative I suggested there was that if you threw everything all into one big spatially based electronic information system you then would have the opportunity to feed things in on the political basis and spit things out on the basis of the natural boundaries. That provides you with all kinds of opportunities: lets you see where the money is going, how we are doing, where the needs are and, on the research scale, what some of the priorities might be and what some of

the things you might want to address are. So I think it is a concept at least that is incredibly interesting and it merits a little bit of a further look.

I think that on the research scale the research community is perhaps a bit better coordinated than, say, a lot of the on-the-ground works in terms of information sharing and dissemination. It is a little bit more a part of the process. If you do a study you are expected to do a literature review, so there is a bit of a mechanism in there. That said, the priorities do not always get derived by the researchers themselves. The dollars are allocated to programs and that is often an administrative or even a political decision, so it is not apparent that there is not a need to fill some gaps in there. I would strongly support the assertion by the Institute of Foresters that the CRC for Catchment Hydrology has done some valuable work and the CSIRO is also doing quite a bit of work, in particular the urban water program and the stormwater area—a little bit different but related—and the CRC for Freshwater Ecology. Those would be the main ones but some of the other water based CRCs also have done some work that contributes.

I think the research agenda is good, but whether the cycle gets completed in terms of disseminating the opportunities back to the on-the-ground folks or back to the policy makers and the decision makers—there are probably some gaps there that could use some attention.

Mr Ford—I wonder too, Mr Chairman, is there a gap? A lot of this research is more the technical research. We do not seem to be doing much research if we are trying to change people's attitudes along the lines of what motivates people and how effective it has been. I can recall about seven or eight years ago that some work was done looking at salinity programs in Victoria—I think it was called Saltwatch. The then Victorian Department of Agriculture—whatever they were called, but that group—produced a document which indicated the success of some of the programs. It was interesting to read about the feedback. I can remember reading about one program in one part of Victoria where they tried to introduce the Saltwatch program and it just did not get off the ground because the community basically did not believe there was ever going to be a problem in their area.

Yet all the signs were there but nobody believed it was a problem: 'It will never happen here. We do not want to get involved.' Of course, down the road or down the river, where there was a problem, everybody was involved but of course too late. They produced this document, which might be worth chasing up, which gives some feedback on how these programs work, why they didn't get off the ground, and at least it identifies some areas that need some attention.

Mrs VALE—I am inclined to agree with your statement earlier about the levy in Victoria and how you felt that that contributed significantly to the degree of community awareness about the whole process and the problems. I thought that was a very good point.

CHAIR—Can I quickly come back with one last question into waste water into rivers? I take you back to our infamous problem on the Darling River of 1,300 kilometres of blue-green algae. That report showed that 50 per cent of the phosphorous levels were coming from man's involvement, particularly from sewerage and waste water into the river. The recommendation was that in those arid and semi-arid areas that that sewage and waste water

should be got out of the river and put onto land and into feedlots and things such as that. Is that happening? Are we getting anywhere with that?

Mr Ford—Yes, it is. Certainly I can speak for Victoria because I work in that area and the Victorian EPA are very proactive, almost harassing water authorities, which is fine because that is their job, and saying, ‘Look, fix this up.’ I am a little critical—and this is a personal view—that they are saying, ‘Take it out of the river and go to land,’ because there are some areas where it may be cheaper and more effective to simply treat it to a very high level and return that treated water to the river to provide flushing flows or dilution flows or whatever. The Victoria EPA has a policy, ‘Where practical go to land,’ and we argue, ‘What’s where practical?’ But certainly that program is happening in Victoria and I believe in New South Wales. Certainly in the smaller mid-western and western towns, or the northern part of the Divide, where there is high evaporation, going to land is probably a good solution.

But the danger I fear is that we may well be building up a time bomb under our feet in that if we do not manage properly those irrigated feedlots or whatever they are, we could finish up increasing nitrate levels in the ground water and that could come back and bite us 20, 30 or 40 years down the track—it may be a good idea now. Again, my authority has sewered a couple of small towns recently and got a lot of reports on how we should be disposing of it and how we should be managing those irrigation areas. Really, it is quite a technique that needs to be looked at. How do you ensure that happens so that you try and balance the water uptake by the trees with what you put on? You need to do some flushing so the salts do not stay there but you need to minimise that and try and get the nutrients taken up. So it is happening but I worry a bit. Are we doing it properly or are we building another time bomb somewhere?

CHAIR—Thank you very much.

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

That, pursuant to the power conferred by section (a) of standing order 346, this committee authorises the publication of evidence given before it at public hearing this day.

Committee adjourned at 11.42 a.m.

