
COMMONWEALTH OF AUSTRALIA

# Official Committee Hansard

# HOUSE OF REPRESENTATIVES

## STANDING COMMITTEE ON AGRICULTURE, FISHERIES AND FORESTRY

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

MONDAY, 7 APRIL 2003

MELBOURNE

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**HOUSE OF REPRESENTATIVES**

**STANDING COMMITTEE ON AGRICULTURE, FISHERIES AND FORESTRY**

**Monday, 7 April 2003**

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

**Members in attendance:** Mr Adams, Mrs Elson, Mr Forrest, Mrs Ley, Mr Schultz, Mr Sidebottom and Mr Windsor

Terms of reference for the inquiry:

To inquire into and report on:

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

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

## WITNESSES

**Committee met at 10.25 a.m.**

**HURDITCH, Dr William John, Project Adviser, Pratt Water Pty Ltd**

**NIXON-SMITH, Mr John Fife, Financial and Commercial Adviser, Pratt Water Pty Ltd**

**CHAIR**—I declare open this public hearing of the House of Representatives Standing Committee on Agriculture, Fisheries and Forestry in its inquiry into water supplies for Australian rural industries and communities. Today's hearing is the eighth one for the inquiry and it is part of the committee's program of hearings and visits in different parts of Australia. I welcome the representatives of Pratt Water Pty Ltd. Although the committee does not require you to give evidence under oath, I should advise you that these hearings are formal proceedings of parliament and, consequently, they warrant the same respect as proceedings of the House itself. I remind the witnesses that the giving of false or misleading evidence is a serious matter and may be regarded as a contempt of parliament. Do you wish to make a brief statement in relation to your submission?

**Dr Hurditch**—Thank you very much. Mr Pratt made a brief submission quite some time ago to this committee. It was received by the committee on 30 July, so eight or nine months have gone by; however, the substance of the submission remains the same. What we have prepared to do today is to try and elaborate on some of the issues or items that were summarised by Mr Pratt in that earlier submission. Since that time, there has been a lot of work done in this whole area, particularly by the Pratt Water team. I thought we could give you a bit of an overview of what Pratt Water is about, what the team is doing, and then go into some more detail about our very early thinking on financing for public water infrastructure. We have some material to hand up to help with some of the explanation. I will lead off and then we may take some questions.

Just a bit of an explanation about Pratt Water itself: Pratt Water has been formed as a company. It is designed specifically as a public advocacy enterprise to start to seek to change the way Australia thinks about its water infrastructure and water use. What we want to do in today's presentation is to respond to the request to elaborate on the financing models that have been put into the public arena—and there has been quite a lot of coverage of those in the press and other places—and to comment on a new study that officially got under way just this last week into identifying opportunities for investment in water saving and water productivity in the Murrumbidgee Valley, as perhaps a microcosm, or a macrocosm, of Australia's water systems.

That study has been partly funded by state and federal governments—it has received some very helpful funding—and also by Pratt Water. It is important to note at the outset of this presentation, however, that that study does not—and I stress 'not'—include an analysis of financing mechanisms for water infrastructure. It was decided early in the study that we would exclude the concept of water bonds or water financing of infrastructure from that study for a number of reasons. Firstly, we think it is essential that we first undertake an examination of the infrastructure development needs themselves before we think about financing, because you do not know how to finance something unless you know what it is. There is a lot of work to be done on what the water infrastructure needs in a place like the Murrumbidgee might be. Secondly, we need, in parallel to that, a much broader analysis of infrastructure financing issues generally in the community. There has been a lot of toing-and-froing about public infrastructure financing. With those caveats, we will go fairly quickly through some key points about Pratt

Water and the study that is being undertaken in the Murrumbidgee Valley and then talk more about some of our ideas on financing.

In August last year, Pratt Water released a document, which has been distributed widely, called *Water in the Murrumbidgee Valley: a report by the Pratt Water group*. This was the result of eight or nine months of intensive work by a team fully funded by Pratt Water to look at opportunities and issues involving water for environmental, economic and social outcomes in the Murrumbidgee Valley. It was a scoping study, and there was quite a lot of material behind this slim volume. The purpose was to make recommendations for further work. The study I referred to, which is just starting this week, is further work that arose from those recommendations, so there has been quite a logical way of approaching this.

The key rationale behind all Pratt Water thinking is that water is the resource that will drive regional renewal in Australia. If there is one single resource or idea you could think of that would assist with regional renewal and rejuvenation of regional areas it is water. You can think of forests, minerals and a lot of other resources, but water is the key common resource which will drive that regional renewal. So that is the underpinning concept. There is a very strong regional development and regional renewal focus for this work.

The objective of this Murrumbidgee study, which is just starting, is to prepare a full project feasibility for targeted investment within the Murrumbidgee Valley which will deliver water efficiency gains of a scale that will produce major environmental, economic and social benefits to the region and beyond. What we want to achieve from the study is to identify ways of making the Murrumbidgee a template or model within the top 10 performers of irrigation regions in the world on key benchmarks. That is a global objective of this—that for any irrigation or water use system in the world the Murrumbidgee will rank in the top 10 on any chosen benchmark. Some of those benchmarks could include water use efficiency itself, environmental sustainability of that water, value added from the water released from the headworks, regional gross domestic product and jobs generation as result of the water use, on-farm profitability, market access for products and the introduction of world's best technology. Those are some of the indicative benchmarks that you could apply to that sort of outcome.

Also, importantly, we want to make sure that this work in the Murrumbidgee is transferable. In that sense, it is very much a template, and I think that is one of the reasons why the federal and New South Wales governments, through the national action plan, have been proactive in seeking to support this. It is not just about the Murrumbidgee but about Australia. If we can demonstrate in a place like the Murrumbidgee that we can get major water productivity gains then we ought to be able to transfer that to other water-using areas.

It would also be important that we are able to measure the benefits from any investment in water—measure them in a way that has not been done before. For example, we tend to think of water productivity in terms of X thousands of dollars per hectare in farm production, but Pratt Water is starting to think more about measuring benefits in terms of total community wellbeing, with 'wellbeing' being the provision of good, sustainable jobs for people, the enhancement of the environment through more appropriate wetting and drying cycles in natural systems, and identifying product markets that are going to be stable and resilient into the future, rather than perhaps the herd mentality, which is to get into some crop, then oversupply and have a crash. These are some of the ideas whereby we want to ensure the outcomes will be transferable to other parts of Australia.

That is a bit of an outline on the Murrumbidgee study. We have meetings on the study running today, tomorrow and probably every day for the next 18 months with a whole range of different stakeholder groups. I believe it is going to be a very exciting one. I will leave that there and move to the whole question of infrastructure financing issues. These are picking up some of the themes that Mr Pratt included in his submission of last year. I will pass on to John Nixon-Smith to talk about some of the financing imperatives for infrastructure. There is suggestion in the media that Pratt Water is only interested in some private sector activities or private commercial gain. I should stress here that we are talking about the financing of public infrastructure for water.

**Mr Nixon-Smith**—I would like to briefly outline the current role of government in water issues, such as public-private issues, which have had a lot of press; the water bond concept, which Mr Pratt has spoken about on numerous occasions over the last 12 or 18 months; and barriers to private investment. I will also speak about the public benefits of private investment and make some other general observations. One of the reasons we believe it is necessary to have strong government involvement in the financing of water saving is that the Commonwealth has had a significant role in improving water management through many programs such as the National Action Plan for Salinity and Water Quality, the National Water Quality Management Strategy, the national reform policy, the National Wetlands Program and the National River Health Program. So the government has already earmarked a lot of funds to address many of the water management issues in the country. The private sector's role is to identify their capability to capture potential benefits from such programs.

We believe that the government needs to be involved to ensure that non-market or unpriced benefits from better water management are optimised. This includes environmental services, covering biodiversity, salinity reduction, public infrastructure management and the social benefits of productivity gains. This links in with what Bill was talking about in terms of driving regional growth. We see the driving of regional growth as underpinning the strengthening of the social fabric in regional areas. The project will require new institutional arrangements, which governments will have a key role in developing and mediating.

One of the key issues in public-private investment arrangements is that the government and investor must define and allocate risks, including sovereign risk. The higher the uncertainty, the lower the probability of a viable, commercially and publicly acceptable project. If there are undefined areas of sovereign risk, it is much more difficult to put into place a private-public arrangement. If you move down this track then you need to detail—in a long-term concession arrangement between the government and investor—how those arrangements will work. A concession deed normally covers the risk allocation matrix, the pricing regimes—in this case, how water would be priced; and that would be the water saved by the private investment in new infrastructure—resource management, and sovereign risks and responsibilities.

There probably will be project specific legislation requirements which would help remove or clarify sovereign risk. There would be some arrangements and agreement on debt service and equity returns—that would be necessary for the private investor. There would be financial guarantees, probably provided by both government and investor. There would be water rights and allocation to the investor in terms of water savings from their private infrastructure. The investor would have those rights. There would be service levels agreed for the users of the new infrastructure, and you would have to identify material adverse events. Again, the investor

would be seeking a regime under which they would be awarded compensation for government decisions in the case of certain events happening.

In relation to water bonds, it is best if we work through the schematic, which is in the handout as well. Talking generally, we see the water bond concept as a good opportunity to provide a secure investment opportunity for superannuation funds, ethical funds and private investors. The bonds would be issued by the government in a way similar to the issue of Commonwealth bonds. The proceeds of those bond issues would go into what we have called in principle a water bond vehicle—some authority that would have responsibility for receiving those funds, investing them according to certain criteria, overviewing the construction of the infrastructure and looking at controlling the water saved through these investments.

The other opportunities that could be used for water bonds may be to provide long-term finance for on-farm irrigation improvements so there is some incentive to encourage farmers to move to new technology. There would be the ability to acquire water that was not required by farmers after they had upgraded their irrigation systems. The authority would then on-sell water for new farm developments that met certain criteria in terms of the standard of irrigation and other practices including very sustainable markets.

The difference between a water bond and a Commonwealth bond is that the funds being applied from water bond issues would have to meet very specific criteria. It gets back to the public benefit, measured in the areas of GDP, environmental benefit and social benefit. Part of developing a water bond concept and authority would be that the projects funded would have to meet specific criteria over those three areas. The investors would be paid their interest from consolidated revenue. At the end of the term—whatever that term would be—the investors would be repaid or there would be a decision to convert and roll those mature bonds into a new bond issue.

Regarding the way the money would flow, we believe that over time—and it could be the other side of 10 years—the water bond vehicle would probably get a cash flow that would start to reach equilibrium. It could be a period of a decade or so of having the seed capital to finance key water projects Australia wide. When we say ‘Australia wide’, it is reasonable to say that the water bond could be considered for both regional and urban projects. We were particularly looking at major water treatment and reuse in major urban areas and capital cities.

**Dr Hurditch**—I would like to make a comment about that. As we said, this diagram is based on early thinking, but it is important to bear in mind that the investor sector is largely disinterested; it does not have to have an interest in what is happening on the farm or in the regions. The investment sector is looking for long-term, patient, government backed avenues for investing funds. That is an important consideration. Although there are investors out in left field, the proponent of the bond activity in infrastructure bonds or other arrangements, for example, tends to have a direct interest in the infrastructure development. This is actually a separation which is important, because it allows the water bond vehicle—whatever it is, such as some sort of semiautonomous government body—to actually focus on the real business of deploying those funds into water productivity and water-saving activities. There are not so many of what you might call the gamekeeper-poacher conflict of interest type issues arising.

**Mr Nixon-Smith**—That is a good point. We see that in the superannuation sector and their portfolio split-ups there is an appetite for actually having access to these funds. Once you start looking at infrastructure bonds and financial instruments like that you really have shifted back into some type of arrangement with the private sector, because they are usually linked with other private funding, so you are then back into having to set up a concession deed, analyse risk matrixes and go down that path. So infrastructure bonds are not truly a public funding solution.

**Dr Hurditch**—Perhaps we can explore that in more detail in a little while, if there are questions, but we will finish the presentation first.

**Mr Nixon-Smith**—We believe there are a number of barriers to private investment in major water-saving infrastructure that would need to be worked through to get a viable project implemented. The first is a very key one: pricing regimes for water access entitlements. Currently, they are a state of flux in many areas of Australia and at this point in time would represent a lot of risk to private investors. Many primary producers would be uncertain regarding future water allocation and processes because that would be in the hands of the private investor if it were privately funded. You would have to work through the constitutional issues, where states have constitutional control over water, and there would need to be collaboration between Commonwealth and state government to resolve those problems with major river systems. The other issue which is unresolved at present is to do with diverting water to rivers for environmental purposes. It represents an open risk and would open the issue in terms of private investment and how the government would pay for the water required for environmental flows. The investor would own the infrastructure and would need to cover debt service and market based returns for equity investors. That would have an influence on pricing.

The other key issue is that it may be limiting in terms of achievements in broad public interest areas such as regional development and national and socioeconomic benefits. And there is the risk that the smaller farms and businesses could be disadvantaged and potentially disenfranchised. Since the investor would own the saved water, they might have the capability to restrict water access entitlements to exclusive groups. Governments would be required to purchase saved water at commercial prices, which would based on a requirement to cover debt service and equity returns. That would be the water which would be saved for environmental purposes.

**Dr Hurditch**—The reason we raise those issues is that some of the very dry economists in the world would say, 'If it is going to work and we are going to be able to make water savings, turn it all over to the private sector and let someone invest in it. It will all come out in the wash.' We see many barriers to that happening, and they are not all just market barriers; there are equity barriers and distance issues. That is why we believe that the water bond vehicle—which has government involvement and backing—is a much more appropriate approach to major water supply infrastructure funding than a pure, what you might call dry, economic approach with straight private investment. I think there will be many debates about this, particularly in light of the issue of public-private rights and responsibilities.

There are many benefits that will flow to the government from the water bond scheme, and I will go through some of them today. One of the concerns with the water bond approach is convincing Treasury officials and others that a bond system is actually worth retaining and increasing, because there is pressure now to do away with government backed bonds in Australia. There has been a lot of political and officer level comment about the need to do away

with these. The market has reacted to this by saying that we do need a long-term bond market to provide part of the mix of portfolios for long-term funds.

If the government wants to get involved in the bond scheme, we see a number of major benefits that could be obtained. There is a real role for government to identify and target where water should be delivered to in terms of regional opportunities. It is not just a leave-it-to-the-market situation. There is a much bigger opportunity for governments to get involved in identifying where water supplies can be directed. There is a very big role for government in the recycling of water and the improvement of drainage and system health. The soils and catchments do not belong to anyone in particular; they belong to the commons. So there is a government interest in ensuring that environmental outcomes are maximised. There has been a lot of talk about the downstream impacts of not only salinity but also the underwatering of wetlands and long-term habitat areas, and there is an important role for government in that. So there are environmental benefits of government involvement in this funding.

There will be obvious social benefits from this scheme. We do not need to go through all of them, but there is clearly an enduring government interest in ensuring regional growth and renewal and retaining families and productive units in regional centres to stem the outmigration from regional centres into the cities. Other important social benefits in regional centres that have the benefit of more productive water usage include flow-on activities such as schools, hospitals and other local services which enhance the amenity value of regional communities. In terms of other considerations, we need to ensure that Australia has a more robust water policy in the future and that it is not just a policy that constrains but a policy that enhances and is proactive.

In the Murrumbidgee, for example, our initial scoping study revealed that around 40 per cent of the water released from the headworks, Blowering and Burrinjuck dams, never finds either any environmental or productive use but is lost in evaporation or contamination. So there is a major public interest in ensuring much better water use. I think other people making presentations to this hearing will articulate the issues behind the outflow of large amounts of water from our metropolitan areas into the ocean and the public interest in ensuring that that is done in a better way. Other questions that will emerge from the involvement of companies like Pratt Water in this sort of activity are: who will own the water released through the investment in water bonds? How will farmers benefit? We are also happy to answer some of those questions.

**CHAIR**—Thank you very much for that. I appreciate that added information.

**Mr SCHULTZ**—Given that water resources is constitutionally a state responsibility, what confidence do you have that a national approach to this vital issue would be successful? I ask this in the context of being advised today that Melbourne Water has chosen not to come and speak to this committee today, so what I am looking at is the politics of it.

**Dr Hurditch**—Clearly it is an issue for the states and the federal government to come together on. The COAG water reforms were designed to address that. I guess our concern is that the reform process grinds on year after year and we see the continuing issues of not only drought, which is inevitable, but also loss of productivity and salinity emerging year after year. So it is an issue that needs to be dealt with nationally or perhaps cooperatively between the

states and the Commonwealth. With the water bond structure, we see the biggest benefit that the federal government can bring is a balance sheet. There are many other benefits, but that one is the most important in terms of establishing a secure, sovereignly backed investment basis to enable the private sector to work hand in hand with regional communities and identify investment in new opportunities. There is plenty of technology; we do not believe there is any shortage of technology for water saving and increasing water productivity. It is a matter of identifying the best way to bridge the gap between the haves and the have-nots in the rural community. There are many places where people are doing excellent things, but they are just beavering away and getting on with it. We are not seeing any funds or access to funds flowing to those who could make major differences.

**Mr SCHULTZ**—I would like to compliment Pratt Industries for taking the lead on this issue. Given that all the scientific evidence has shown that up to 80 per cent of open drain irrigation water is lost to evaporation or to seepage, my final question is: is the Murray-Darling Basin Commission the right body to implement changes to ensure that we progress along the track of not only conserving water but also using it much more effectively than we are at the moment?

**Dr Hurditch**—I will leave the judgment on whether the MDBC is the right body compared to others, but we believe that it is very much a cooperative thing and that there needs to be more effort rather than less. There are a lot of public funds being spent on programs such as the national action plan, the Natural Heritage Trust and a whole range of other programs. If you rolled all those programs up into a ball, you would have many billions of dollars of public funds. No-one is suggesting that those funds are not being used appropriately, but if a similar amount of funds were applied to an effective backing of targeted private investment in water productivity then there would be a major benefit.

**Mr SCHULTZ**—I appreciate your diplomatic comments there about nobody making that suggestion, but I would agree with anybody who was critical of that issue that the funds are not being used as effectively as they should be. People should be made more accountable and then we will get a better outcome.

**Mr FORREST**—I would like to thank you for your interest. As a practising civil engineer with 30 years experience in water, it is good to see private industry taking an interest and raising the debate. I have a lot of questions, but we might just let the themes stroll along. Further to Mr Schultz's question, in your schematic representation there is no involvement anywhere for the state. It makes consolidated revenue interest payments and it is obviously structured so that that is a Commonwealth payment. The whole issue of water is so complex and it is constitutionally difficult, so I would like Mr Nixon-Smith—the economist—to reflect on that and on the fact that bonds are still borrowing money. If a government has a policy of not borrowing money, how can you argue for that as an economist? What are the ongoing impacts that that might have on the whole economy of the nation?

**Mr Nixon-Smith**—We want to make it very clear that the water bonds can only be used if they meet certain criteria. They must be positive to the GDP; out of any water savings the environment must get its fair share; and the farming and regional areas must benefit. The money cannot just be raised and spent on any project that takes people's fancy. It has to go through some hurdles of criteria and performance across those three areas. The other point is that we see that this water board vehicle may ultimately have to be a joint federal-state body to work through some of the issues—this is where the cooperation would come in.

**Mr FORREST**—We haven't got a good record on that sort of thing.

**Mr Nixon-Smith**—No. But we are saying that that is a consideration that may have to take place in order to make it work. You might want to add to that, Bill.

**Dr Hurditch**—Yes. Cooperation rather than coercion is clearly the way ahead on this issue. There has been a history between the states, as Mr Schultz said, of politicking and point scoring either way. With great respect to all the people represented, I do not think any party or government is immune from those sorts of processes. That is part of democracy. We would want to see a very robust organisation. Many organisations are agreed to and set up jointly that do avoid some of the politicking that goes on. Perhaps they report to parliament rather than report to the government—there are various mechanisms. I do not think it is beyond the wit of public policy advocates to devise a scheme that can get good cooperation, so long as, as John said, the rules for investment are clear and there is a clear filter.

With regard to Mr Forrest's other comment that borrowing is still borrowing, that is true. But I think we are starting to realise that government has a critical role in leading and forging the way ahead. Two examples come to mind. One is perhaps more politically charged than the other. The first example is Telstra. If the government 40 or 50 years ago took the same attitude to telecommunications as they are to water infrastructure funding, we would not have a $40 billion or $50 billion network of communications led by the government.

**Mr FORREST**—That is true, but the Constitution provided for it with telecommunications and the Postmaster-General. This issue is constitutionally a lot more touchy—that is the problem.

**Dr Hurditch**—Yes, it is. That is a good point. The other example is the forests, though. The area close to our corporate heart is Tumut. It is a great part of the world.

**Mr SCHULTZ**—Well represented today and in the past.

**Dr Hurditch**—In the sixties and seventies, the Commonwealth government in cooperation with the states provided funds and backing for the establishment of large areas of *Pinus radiata* plantations. At that stage there was no market; there was no real prospect of anything immediate happening. But now the Tumut area is a hive of activity based on that resource which, in a funding sense, was led by governments. As we work through the decades, there are emerging areas where the government needs to take a lead, not necessarily in on-the-ground work—lots of Land Rovers and lots of people digging holes—but by being in some way proactive in driving investment in certain sectors. We believe the time has come for water.

**Mr FORREST**—I am not negative to the idea—I am just trying to tease you out a little bit on some of the argument we are going to have to collect if we were, for example, to take up the idea. Other members will have questions, and perhaps we could work up and down the table, but I just want to make one parochial correction to your submission about the Wimmera Mallee stock and domestic system. I imagine that this submission was written before you got your team together, and I would want your team to understand that the Wimmera Mallee system is not for irrigation—it is for stock and domestic use only. In fact, this winter we will be carting water in tankers at $20,000 a megalitre to fill farm dams for stock, and for town water; it is not an

irrigation scheme. I would like you to be aware that the announcement of a consultant for the final design of that scheme is imminent. I would ask that, rather than reinvent the wheel, because the characteristics are all very similar, you cooperate and liaise, because the Murrumbidgee and this scheme have similarities in terms of the way water is harvested and used. I would draw your attention to that.

**Dr Hurditch**—I would make the comment that the Murrumbidgee work is but one facet of Pratt Water's activities. Pratt Water is quite actively involved in negotiation and liaison with a number of regional water supply authorities for technology improvements, industrial waste water recycling and reuse. So we are certainly interested in looking at other opportunities.

**Mr FORREST**—Do you have a list of all the professional people working in the Pratt Water group? For example, I would be interested to know whether you have a lawyer working in the group, or access to one.

**Dr Hurditch**—I do not have the list with me, but we can provide a list to the committee. In fact, the contract we have with the New South Wales Department of Land and Water Conservation, under the national action plan, lists all the participants in the Pratt Water Murrumbidgee project. But there are many others.

**CHAIR**—Before we go on to Mr Adams, who wants to ask a question next, I meant to expand on a comment that Mr Schultz made before. In your submission you said that Australian open irrigation channels are highly inefficient, with losses of up to 80 per cent through evaporation and leakage. Melbourne Water Corporation, in their submission—and I too am disappointed that they are not here today, because I would have liked to have questioned them on this issue—say that there is 20 per cent loss. Professor Gary Jones from the University of Canberra says that he doubted whether the losses from evaporation leaks were anything more than 40 per cent. Could you elaborate on the 80 per cent figure? Was that in findings, estimates or guesstimates?

**Dr Hurditch**—The 80 per cent figure was taken from perhaps the worst-case scenario—'up to' means worst-case scenario. There are many areas in Australia which are performing very well—they are recent. But around the Griffith area, for example, some of the channels were installed in the early part of this century—in the twenties and thirties—and many of them are needing a major injection of capital to make them secure structures. In our Murrumbidgee report, which I can leave copies of with the committee, we made an estimate based on published information for the Murrumbidgee that there was around 40 per cent loss between the headworks and the plant or the crop. We divide that into the public infrastructure component, which is the headworks, the dams and perhaps down to the irrigation channel going into a farm, and then from the farm boundary to the actual crop production. Depending on the technology on the farm, you will have greater or lesser loss. Some farms are now employing root zone drip irrigation, which is highly efficient and highly managed and they are getting enormous productivity gains from the water. Others are still furrow irrigating and spraying in high evaporation conditions. So there is a huge difference there. We see 40 per cent as a typical figure for the Murrumbidgee Valley.

The other point I would make about seepage loss is that, in a way, seepage is not always lost. Seepage can be accessions to ground water and aquifer storage, so it is perhaps a little simplistic

to refer to that as 'lost'. Nevertheless, if the storages have been designed to deliver water for either environmental flows in the river or for agricultural production, if it is lost to deep storage and deep aquifers it is a loss in the sense of the purpose for that activity. So it is complicated in that regard.

**Mr FORREST**—It would vary from scheme to scheme.

**Dr Hurditch**—Very much so. The Murrumbidgee itself has a number of zones. There is the accumulation zone from around Tumut and Gundagai down to about Wagga, a bit further downstream. Then you start to get the distribution zone. So there are differences. Then, further down the lower Murrumbidgee, below Hay, is a more drying zone, because of the major use in the MIA. So there is a big disparity depending on which river valley you are talking about.

**CHAIR**—Okay.

**Mr FORREST**—In the Wimmera Mallee system, of 150,000 megalitres discharged each year only 7,000 megalitres is drunk by human beings or stock. So that is 97 per cent—a lot higher than 80 per cent.

**Dr Hurditch**—That is right.

**Mr ADAMS**—The chair raised the issue that we seem to have based the whole concept on the evaporation and the amount that is lost. That varies from 80 per cent to 40 per cent. In my electorate, there is an open channel scheme which people claim does not lose any water by evaporation. So there is a lot of variation when we talk about what is lost through evaporation. Would you concede that?

**Dr Hurditch**—Absolutely. Australia is a land of extremes, and there are many extremes. If we look in Queensland, there are very good irrigation systems and there are open irrigation systems, which flow from ground water, which are just evaporating off into the desert. There are many extremes. The common theme is that Australia can and must do a lot more with its water.

**Mr ADAMS**—I am interested in your Murrumbidgee irrigation scheme report. Do you have a copy of that for us?

**Dr Hurditch**—Yes.

**Mr ADAMS**—Does that have the terms of reference and the outcomes?

**Dr Hurditch**—No, it is the original scoping study. We can make available the terms of reference for the new study, which is just under way.

**Mr ADAMS**—Right. Can you also give a time frame on that, the costs, who is doing it and all that?

**Dr Hurditch**—The time frame for the Murrumbidgee study is 18 months from about now. It comprises a project team, which is assembled. It includes people provided for and funded by Pratt Water itself, members of the CSIRO, representatives of both state and federal

governments, individuals from the region—including from Charles Sturt University, Department of Agriculture and DLWC—economists from private economic think tanks, such as the Centre for International Economics, and sociologists. There is a wide range of people. This is not just an engineering study; it is a study to identify motivation, opportunity, impediments, barriers and innovation—a whole range of components and dimensions of water productivity. We can provide a list of those people.

**Mr ADAMS**—I am also interested in the social side of the equation, but I will go back to the outcome of water in Australia and the future of water. Why has there not been new technology put in place? Maybe you would like to answer that.

**Dr Hurditch**—I do not think that statement is true. There is a lot of new technology being put in place. As I say, the study has only just begun formally. However, we have been working since November last year on this new part of the study and we have done a lot of consulting. There are an enormous number of private innovators, but it is about capturing information and knowledge and making it available to people. I think it is about the transmission and the communication of opportunities as much as it is about the identification of opportunities. For example, we have had discussions with people in Griffith who are just beavering away innovating and employing on their own farms enormous advances in water saving and water productivity. But what is the commercial interest to them in sharing it with someone else? They are basically doing very well. So there is a greater purpose there, a greater opportunity, to spread that information and make it more readily available. CSIRO similarly is doing a lot of good research work, but it needs to have a commercial outlet and a commercial grounding for that sort of research, so there is a good partnership opportunity between the Pratt Water team and CSIRO.

**Mr WINDSOR**—Firstly, congratulations—it is interesting that you are looking at the regional perspective in terms of community wellbeing, and I wish you luck with COAG, the National Competition Council and government generally. But it seems to me that the reason for the water bond scenario is to provide money to drive the agenda. There could be certain problems. As Mr Forrest said, constitutionally we have the state-federal problem. Has the Pratt group looked at sourcing money in another sense, from an environmental levy which could drag the states across the line in terms of some sort of national concept? Have you looked at another source?

**Dr Hurditch**—The short answer is no. As I have said, the water bond concept is very early in our thinking. That being said, the people we have talked to about the bond concept in other sectors have been very excited by it. For example, there is a lot of excitement about a research bond—not the CRC model but a research bond that attracts private investment to lead and propel major research programs across Australia.

**Mr WINDSOR**—This is an inquiry about what the national government can do in relation to water policy. How does the water bond bring the states over the line if it does not relieve them of some economic pressure that they are under?

**Dr Hurditch**—The bond structure, if it were successful and implemented, would create a large pool—and we are talking potentially billions of dollars—to provide funding for major works that have to date just been drip-fed with funds. We received a briefing paper from one

state government which referred to some of our suggestions of water bonds. One paragraph in that briefing paper was very chest-beating about how they have put $1.2 million a year into an infrastructure scheme for a major region. Well, $1.2 million a year does not even pay the petrol on one level of offices for the system. We are saying it is grossly underfunded and, while we are just utilising recurrent funds out of agencies, or even small allocations from, say, the NHT or the national action plan, we are going to have a huge lag time in getting some progress. We see that this actually ramps up the effort very quickly, because it taps a very big market of patient capital looking for a secure home. I do not know if that answers your question, but those funds would be available to the water bond vehicle for both private and public infrastructure from state and Commonwealth level. We would see it as a global fund.

**Mr WINDSOR**—The property rights issue seems to be a problem right across all the states. Does the Pratt group have a view on how we come to grips with that issue? It seems to me that, if you are going to try and attract private investment, you really do need to have some security in terms of the asset that you are talking about.

**Mr Nixon-Smith**—That is right.

**Mr WINDSOR**—The states and the Commonwealth are having problems with that. Through COAG and the National Action Plan for Salinity and Water Quality and the various salinity arrangements, we just do not seem to be able to come up with a definition that will work for the market. Do you have a definition?

**Dr Hurditch**—We purposely do not have a policy on property rights at the moment. But in our Murrumbidgee study we have set up a number of working groups, one of which is a rules working group. We have five working groups: ecosystem, which deals with all of the natural attributes—the ground water, the aquifers; people; businesses; rules, which includes all the laws, legislation, cultures and market laws; and the final working group, or domain group, which is integration, which seeks to integrate across all those groups. So we are examining the whole question of property rights, perhaps not only from a legal market sense but also from a perceptional sense from farmers, because we need to make sure that it is the absolute lack of a secure long-term right that is causing underinvestments. We need to confirm that. There is no question that people do need to know where they stand before they will invest, but what shape that has is the critical question.

**Mr SIDEBOTTOM**—There is no doubt that the Pratt plan, as it expands—like water, I suppose—has certainly stimulated people's view of how we use water, and the concept of reshaping the use of water in Australia is very important. I would like to raise a couple of issues with you that have probably been levelled more as criticisms, as is always the case when you propose such a broad, expansive view. Firstly, I noticed that in your MIA study you talked about the people involved in the plan itself. There was not any specific reference to any conservation or environmental groups in that. Correct me if I am wrong about that, but I would have thought that they may well represent a group that would certainly have a very big interest in this.

**Dr Hurditch**—We will respond to that. We have had close consultation with a number of environmental groups, both within the valley and globally. In the early stages of approval for the funding, the Australian Conservation Foundation was involved in discussions. We do not necessarily see eye to eye with any group, be they farmers, environmentalists or investors, but

we have been very keen to consult widely. We also have a number of independent environmental scientists on the group—people like David Mitchell—and we have consulted with others in CSIRO who see themselves as independent of any sort of financial interest. So we are keen to ensure that we do have broad cross-fertilisation of ideas from what one might conceive of as the polarised positions of various groups, although we do not see them as polarised positions.

**Mr SIDEBOTTOM**—I just thought it was important to put that on the record. I would like to refer you to a *Sydney Morning Herald* article. In reference to your earlier statements and Mr Pratt's earlier statements, Professor Gary Jones, who is the Chief Executive of the Cooperative Research Centre for Freshwater Ecology at Canberra University, asked who would criticise the plan initially, because it was 'a bit like a motherhood statement'. The article goes on to say that he is 'concerned that the billions of dollars the scheme will soak up could be better spent elsewhere'. It goes on:

... environmentalists are suspicious it's all just a plot to create more thirsty irrigation land that will only put further stress on rivers.

It finishes off:

They will want any water saved to go back to making the rivers flow again, foiling any hopes the cost of the scheme could be recouped through increased agricultural production.

I am interested in your reaction to those implied criticisms.

**Dr Hurditch**—John might have a comment, but I will talk about the expression 'making the rivers flow again', which I think was used there. The Murrumbidgee River has never had more water in it in a normal seasonal time than it has at the moment. It runs a banker of most of the time in most seasons. It is probably flowing more in most of its length now than it ever has. The problem is not so much rivers flowing but when they flow and how that interacts with their biology and ecosystem. We are seeking to ensure that we can optimise their productive potential in economic and social terms while ensuring that we can more closely characterise natural flows. An example, although not from the Murrumbidgee, is the lower Darling, where for the last couple of decades we have put 50,000 megalitres of water down the greater Darling anabranch system every year. The greater Darling anabranch system has never in its history had water flowing down it every year, except during the ice melts of 15,000 years ago. So we have an artificial system of perhaps overwatering some places. The reason the water is put down the greater Darling anabranch is to supply 40 properties with stock and domestic water, which could, like the Mallee, be much more effectively supplied via a pipeline. So it is not a matter of getting the rivers flowing—of course they have to flow—but, consistent with good environmental practice, about when they flow. That is our basic ideology in this.

**Ms LEY**—Could you just expand a bit on the water bonds vehicle and the amount of government funding that it would need into the future? It seems to me, from looking at the scheme, that if the federal government—not the state government—backs the bonds, pays interest and then repays them at maturity, and we set up a body that does the projects and assesses people's ideas et cetera, aren't we just talking about a large government funded organisation? Could you expand a bit on the idea of how private investment can really work,

given that the days when everybody wanted to invest in government bonds are over, with a global world market and people being more interested in riskier enterprises? That goes for superannuation funds as well as individuals.

**Mr Nixon-Smith**—Firstly, the issue, and the work we have to do, is how to develop that authority so that it would not become cumbersome and so that you could keep it focused. The view is that, to get this moving, the cost to the community of fast-tracking infrastructure to get the public benefit would be borne by the community, in terms of servicing the bonds. As Bill said, over a number of years this could be many billions of dollars. But it would be a gradual growth as approved projects get financed. We have to do more work in terms of understanding the cash that would come from the on-selling of water for new productive areas, which would be priced at the right price. Those new farm developments and other industrial developments would have in their economics the right price for water. So you would get that side of it right. The degree to which the public would have to repay all the bonds at the end of the term is something that requires more study. But at this sort of simplistic high level we are saying that the bonds would be raised and paid by government. Part of the modelling, in terms of GDP and social benefit, would be that you would have to take the whole life cycle of the bond, all the costs of servicing, assess against the benefit and demonstrate that that was positive to the community.

**Dr Hurditch**—I would just add that we are not talking about pouring water down a black hole; we are talking about investing in a major infrastructure program. Again, I would go back to the Telstra analogy. Governments funded Telstra and its development, and continue to, and there is now an asset base that is obviously worth selling off—at the moment. A huge build-up and benefit has been provided as a result of that. The assets that will be built up in the water bond vehicle could be maintained as ongoing public infrastructure, or at some stage in the future governments might decide to create some commercial or corporate entities that could manage those. We see that there would be a mix of outcomes from on-farm improvements, which would be paid back immediately at low interest rates, to the midstream, which might be part public and part private, and then to the headworks and dams, which could be either public or private. So there is a long-term mix available as a result of this sort of investment.

But I would get back to my point that we are currently spending many billions of dollars on Murray-Darling Basin programs aimed at attenuating salinity, improving water quality and improving biodiversity, and that money is not necessarily returning measurable benefits to the community. There are some, but the same sorts of government outlays in an aggressive and proactive infrastructure program could deliver enormous benefits if they were measured the right way.

**Ms LEY**—I know the New South Wales government has contributed to the funding for the feasibility study, and I wholeheartedly endorse an approach that looks at infrastructure which enhances irrigated agriculture and produces more economic returns to regional communities, but is that the sort of outcome that the New South Wales government is looking for? I would be very surprised if it is.

**Dr Hurditch**—They can speak for themselves, but they have signed off on the terms of reference.

**Mr SIDEBOTTOM**—Good on them!

**Mr SCHULTZ**—I also read the article that my parliamentary colleague referred to. It jogged my memory about the significant amount of technology that went into the Tumut plant and the reduced water use at similar plants around the world to only 20 per cent of what they had been using. That was loudly applauded by some of the key environmental groups in this country. To illustrate the point, the article refers to a fellow in Griffith, Louis Sartor, who runs an 11-hectare orange orchard at Hanwood, who invested $80,000 installing a computerised drip-watering system. He and 15 other farmers who were involved in this Murrumbidgee irrigation trial have seen five kilometres of open channels replaced with 3.2 kilometres of pressurised underground pipes, and they say that the trial is expected to save 900 megalitres a year. The point I am making is that would indicate that those people who are committed to the issue of sensible use of a very limited resource are in fact proving that the direction in which Pratt is going in driving this agenda is the right direction to take. Would you agree that Louis Sartor is a classic example of the sort of individual that has some vision in relation to the need for better utilisation of a resource he has been using for many years?

**Dr Hurditch**—Absolutely. The other comment is that 900 megalitres does not sound a lot when you say it quickly, and it is not a lot in terms of a small irrigated farm, but the Tumut pulp and paper mill which, as you say, has been widely heralded as a major environmental and job creating business, uses 1,250 megalitres a year, which is not much more than 900 megalitres. That is a $400 million investment, generating about 1,000 jobs and a huge balance of payments benefit to the economy. If saved water can be allocated to both new economic developments and environmental improvements—such as watering areas of river red gum that have not been watered for a long time but need to be watered to ensure biological diversity—we will all be winners. That small example is very important because that sort of saving could enable a major investment of the scale of a quarter of million dollars to go ahead.

**Mr SCHULTZ**—In closing, I make the point that all of the problems we are living with today in terms of our farming practices are as a result of expert advice from academics and people in the past. I take a very narrow view of the contribution from some of these scientists.

**Mr ADAMS**—Following on from what Alby says, I read what that person has said. He is using his skills to enhance the use of water and his philosophy is to make sure that what he saves goes into the environmental flow, which is a complex issue, as you have said. Are we talking about subsidising bad farmers or are we talking about harming the ones who are doing the right thing? You said earlier that there were a lot of people doing a lot of good things. Are we going to go into subsidisation of bad farming practices and unsustainable farming? Some people believe there are areas in this country where we should not be farming, where we should get out of farming. You mentioned earlier that small farmers may not benefit greatly from some of these projects, that economic scale will probably take its toll. Can you give us your views on whether we are going to subsidise bad farming practices by introducing best practice? How do we get people to best practice without subsidisation?

**Dr Hurditch**—To pick up on the point about small farmers being disenfranchised, we made that comment in the context of some assertions, such as, 'Just let the private sector do this. Don't have government involvement.' That was the reason we said that. Unless there is government involvement, you will run the risk of small farmers and people who do not have a lot of, perhaps, political or commercial market muscle being disenfranchised, so there is an

important role for that. Certainly there is no suggestion at all of subsidising bad practices but, if there is a situation where a farmer does need to access finance or funds to do something that is demonstrably going to benefit water productivity, there ought to be access. At the moment, funding is difficult. If you go along to a bank and say, 'I've got a water licence. That's good security, isn't it?' They look at last year, when some farmers got three per cent of their allocation. How on earth is that good security? There is a major issue with security for raising funds for innovation but, as John said, any vehicle or organisation which was allocating such funds would have to have a very close check list.

**Mr ADAMS**—Let us go back to the failure of the banks and financial institutions to lend money for innovation. Are you saying there is a failure of the banks and the financial sector?

**Dr Hurditch**—John can comment on that because he has done it.

**Mr Nixon-Smith**—We have had lots of comments about difficulty in raising finance for new irrigation or upgraded irrigation systems in terms of those systems themselves being used as collateral. Farmers always have to use other collateral to support the borrowings for those. The rationale behind that is, from the bank's perspective, that a lot of this is buried in the ground and, if there were a default situation, it is very difficult for them to actually seize those assets and realise them. So there is a problem in that those farmers are actually trying to manage things very tightly and do their finance off the back of what they are doing with their irrigation improvements. If they have a lot of debt, they do not have a lot of room to move in terms of getting much credit on new irrigation systems.

**Mr ADAMS**—Yes, but the fisherman has to do the same thing. He has to go and convince the bank that he needs the new dredge or new gear, that he is going to catch X amount of fish this year. There are no guarantees he is going to do that too.

**Mr Nixon-Smith**—Sure.

**Mr ADAMS**—There are a lot of people in the private sector that have to go and prove what they are going to achieve to pay off the debt. What you are saying to me is that there is some failure in the system that is not allowing that to happen.

**Mr Nixon-Smith**—It is about recognising the collateral value of irrigation systems, because they are actually installed in the ground and they are not—

**Mr ADAMS**—We have accepted that the irrigation systems of Australia are old and run down. You have given evidence to this committee that that is a fact; we all know that that is a fact. They are run down; therefore, either the people that use them and the government have not reinvested in them or there is not enough money being made from what they are being used for to qualify their upgrade. If the Tumut mill has to renew a part of its infrastructure to continue to make paper, it will do so. That will be an investment by the board. We are saying that somehow rural Australia has not renewed itself to keep this irrigation going or it is not getting enough from the top end; the vegetables, the grain, the rice or the grapes, or whatever, are selling too cheaply to actually put the money back into the system.

**Dr Hurditch**—Or another possibility is that there is a confused ownership structure. The government owns some of it; Murrumbidgee Irrigation Ltd owns some, which is a cooperative; the farmer owns what is from his gate to the end, but he really does not own it because the water flows through and he might have a scale-back in his allocation in any year because of certain factors. So there is a confusion of ownership and title, which gets back to Tony's comment about water property rights. It is not just water property rights; it is property rights generally and access.

**Mr ADAMS**—What about the price of water?

**Dr Hurditch**—What about it?

**Mr ADAMS**—Are people paying enough for water or is it too cheap?

**Dr Hurditch**—The answer to that is: it is probably too cheap in some places and too expensive in others.

**Mr WINDSOR**—The issue here is how you fund water savings and drive more efficient use into the future. The reality at the moment is that, given the current access and ownership rights across all of the states, the financial system as we know it does not see the collateral in the product. We have to develop some sort of funding model that actually drives that. In my view, to get anywhere, you have to come to grips with the property right issue. You have to start to put value on the asset itself. The banking system just does not value it at anything at the moment.

**Mr ADAMS**—There is no legal tie between water rights and property. Just because there is a river running through your property, there is no legal right for you to own that water. As I understand it, there is no legal standing, is there?

**Dr Hurditch**—There are some rights—there are riparian rights and also licensed rights. But, as to the licence itself, if it is a 100 per cent secure or high security licence, it has one value and, if it is a low or general security licence, it has another value. It is like load shedding in the electricity industry. If we have a dry period, everyone sheds load on their low security licences, which is a problem. As John said about the collateral, the only recourse the bank has is to a bunch of pipes and drip lines under some orange trees.

**Mr ADAMS**—Or the cash flow that will come from the increased productivity and out of investing in new productivity and new ideas.

**Dr Hurditch**—Cash flow is not collateral, unless you have securitised it in some way.

**Mr ADAMS**—I am not saying it is collateral. But banks are very poor in that sense.

**CHAIR**—I want to apologise to our next witness, who has been held up for half an hour.

**Mr FORREST**—Madam Chair, these guys have some good wisdom. I would like to find out if—

**CHAIR**—I was not winding this up; I was just apologising to our next witness.

**Mr FORREST**—Even if we have to shorten it today, it would be worthwhile continuing this at some time, because we are teasing out a fair bit of information here.

**CHAIR**—Most definitely. I would like to see Pratt Water back before the committee before the end of the inquiry.

**Mr FORREST**—It is not all about piping open irrigation channels. We also have a lot of piped public schemes right around Australia that are old—some of them are 50 years old. Yet, if we are going to compete in the international marketplace, we have to have what the Israelis have, where irrigators virtually have a market on order. They do not have to order and wait until next month; it is like switching on your town water. The MIA is one thing, but there is still a whole series of other schemes that we have to address. This is why I am really interested in the bond thing. The sovereign risk this year is confirmed everywhere, so you cannot blame a bank—they will want that sort of security. The only way to do it is to provide it by not wasting so much water. That is not just about piping channels; it is about upgrading even piped irrigation schemes. So I was wondering whether your group is going to think beyond that after the MIA.

**Dr Hurditch**—Absolutely. We have a technology group as well as the five domain groups. I mentioned that we have a technology working group, which is tapping into the irrigation future CRC and a whole range of other groups are looking at various technologies. I guess the problem with just talking about water bonds or piping irrigation channels is really that that is the public perception. There is a lot more below this, as I hope we have made clear. Madam Chair, we are meeting in Canberra quite often as a group, so there is an opportunity to interact with this committee at any time if you would like us to.

**CHAIR**—Thank you.

**Mr FORREST**—I am teased by Bill's comment about other technology. Mr Pratt has said in Canberra that he is interested in the whole issue of what is happening with our weather. Something dramatic is happening and, in the long term, it is not healthy. What has happened this year and last year has been happening for 25 years. Is the Pratt group going to address the issues of weather modification and the need for research to pick up on the areas where we have let the world leave us behind in the last 30 years? He mentioned cloud scene, but that is only one aspect of the World Metrological Organisation's interest in weather modification. Are you going to take a look at that?

**Dr Hurditch**—Weather modification per se has not been addressed, but our ecosystem domain group is looking at scenarios for the future which will identify where things are likely to move in terms of major impacts on the system. We are certainly looking at climate change as an issue. There is another group which is looking at the rules. There are rules that apply to changes in allocations depending on climatic situations. There is an opportunity to look at those various aspects in our study. We have a project bulletin which some of you would have seen. It further elaborates on the Murrumbidgee study. I can leave it with the committee.

**CHAIR**—Thank you very much. I appreciate that. We will have to close very shortly, but each member wants to ask a quick question.

**Mr SIDEBOTTOM**—I have a statement rather than a question. For the public record, I do not quite concur with the inference by Alby that scientists and academics are responsible for the need to reshape our water policy. I want to make that clear.

**Mr ADAMS**—I am glad Sid sorted that out. I do not agree with Alby's comments either. There is a CRC working on water, isn't there?

**Dr Hurditch**—There are about three of them.

**Mr ADAMS**—You are going to send us the terms of reference of your inquiry; the five domain groups are detailed in that, are they?

**Dr Hurditch**—Yes.

**CHAIR**—There is a group in Queensland that is producing a plastic bubble wrap type cover for channels and dams. They can cover up to about a four-hectare dam and are seamless. They say it costs about $4,000 per farmer to install this. It seems to me a very low cost for a farmer. Comparing a dam on the adjoining property to the one where they are installing the cover—so comparing apples with apples—they say that in the first year the farmer can recoup their money for the water saved. Has Pratt Water done any studies into covering rather than piping?

**Mr Nixon-Smith**—Yes, they have. They have looked at a number of systems. Some of the areas the technology group are looking at are water transmission systems and systems to minimise evaporation. As they work through the study, they will be looking at a whole range of options to address specific issues that come out that need remediation.

**CHAIR**—Has Pratt Water looked at anything that is being done in that area at the moment by other organisations or groups?

**Mr Nixon-Smith**—They have looked at some generally, both in Australia and overseas. But if we can get details of that organisation, we are happy to follow it up with them.

**CHAIR**—Thank you. John, do you want to ask another quick question?

**Mr FORREST**—Yes, I do, but I would be interested to reconvene with these fellows when they are in Canberra some time.

**Mr WINDSOR**—To elaborate on some of the things John was talking about earlier—the issue is more than just pipes—could you, in 30 seconds, tell us about the Menindee Lakes proposal where, through re-engineering an existing scheme, you can create new water? Can you explain the magnitude of that in terms of the proposed investment and the benefits that will come out the other end? I think it shows the potential.

**Dr Hurditch**—This is not a focus of Pratt Water itself, but in the Menindee Lakes, which was a major storage construction in the late forties and early fifties to provide water for Broken Hill and for development in the west, there are a number of natural lakes which now have water in them. But when there is a drying phase in the Menindee Lakes about 200 megalitres of water is trapped in one of the lakes because it is downhill—which is only a matter of centimetres out

there—from the other lakes. So there is an opportunity with very low-tech works to liberate some of that water at the very critical dry time.

**Mr WINDSOR**—Is that 200,000 megalitres or 200 megalitres?

**Dr Hurditch**—That is 200,000 megalitres, 200 gigalitres. That is 10 per cent of the Murrumbidgee's flow. There is another area, as I said, the greater anabranch system. Every year 50,000 megalitres are put down there for stock and domestic use. The stock and domestic requirement is about 3,000 megalitres, so there is a 47,000 megalitre surfeit going down there. Certainly you would need to put some down the anabranch for environmental flows to more closely mimic the natural program, but for a pipeline investment of something of the order of $40 million—probably less—you could pipe permanent water for stock and domestic use to the greater anabranch pastoral communities. That would provide about 3,000 megalitres a year to those communities and save 47,000 megalitres on the transaction year in, year out. That is the sort of scale of opportunities available through clever thinking. Again, the question is: who will come along with $40 million? Even if all the pastoralists clubbed together, they would not be able to fund that. That is a prime example for savings to be generated by some sort of public investment.

**Mr FORREST**—That area would probably have only 40 landholders, or fewer.

**Dr Hurditch**—Probably.

**Mr ADAMS**—What about the public interest?

**Dr Hurditch**—In terms of the public interest, the 47,000 megalitres that you liberate can be utilised in other parts of the Murray-Darling catchment for either production, environmental flows or reducing salinity in the lower Darling and Murray rivers. So once you liberate some of that water, there is flexibility in its use.

**Mr ADAMS**—But there are the issues of cost, who is going to pay for it, and what are the project pluses and minuses.

**Mr SCHULTZ**—The fact that this small project would result in an environmental flow of that magnitude is a pretty good indication of the need for government to make a contribution. The point I am making is that we waste more than $40 million on some of the projects that we are running, such as the Natural Heritage Trust, anyway.

**Ms LEY**—What is the next stage after the feasibility stage is completed? What is the next step in the process? You are looking at big picture issues that do not apply just to the Murrumbidgee Valley. How can you get them onto the agenda?

**Mr FORREST**—It is more than a feasibility study though, is it not? You are actually doing the implementation.

**Dr Hurditch**—The Murrumbidgee study is to identify investment targets for water productivity improvements in the Murrumbidgee. The hope is that we will package up projects that can be funded either through the private sector or through a public-private bond type

structure for the Murrumbidgee. That is the first stage after this study. The next stage is to start to organise both the activity on the ground and also, importantly, the politics of ensuring that this is actually a durable, long-term solution for water. There is an institutional issue that has to be addressed sooner or later, both in terms of the financing of markets and Treasury's policy on bonds, the issues of Commonwealth-state relations, and the issue of regional development policy.

**Ms LEY**—You are identifying projects in the Murrumbidgee Valley at the moment?

**Dr Hurditch**—Yes.

**Ms LEY**—And the next step is to actually fund those projects?

**Dr Hurditch**—Yes, but the point is that it is not limited to just saying, 'We want some projects'; it is about identifying how this can apply catchment by catchment and valley by valley models.

**Mr Nixon-Smith**—I think it is also important that, on those projects we identify, we will also be assessing the benefits in terms of the environment, GDP and the social framework.

**Dr Hurditch**—It has not been done before.

**Mr Nixon-Smith**—We will be putting forward projects and their community and public benefits.

**Mr ADAMS**—We can do it for every other industry in Australia when we have done this model. We can work out what the public interest is.

**Mr Nixon-Smith**—The reality is that you have to put up some models to prove the case anyway.

**Mr SCHULTZ**—That is right.

**Mr Nixon-Smith**—Or you get into this problem of just generalising scenarios which you cannot really defend.

**Mr FORREST**—I would like to clarify one thing. Is the $100 million that Mr Pratt has put on the table unconditional or is it conditional on the establishment of some type of bond arrangement?

**Dr Hurditch**—I think everything is conditional, but he has said on a number of occasions—and you have heard him yourselves—that he is prepared to put $100 million of his own money into investments that will improve water productivity. He has already put millions of dollars into the public advocacy side of it over the last number of years. We are now getting more into the next stage, which Susan was talking about, of a tangible investment that is going to yield those sorts of benefits.

**CHAIR**—Thank you very much. I would like to thank Pratt Water for their submission, and also to thank you for the added information. You have definitely simulated interest here, and I agree with the committee members that it would be in our best interests to make sure that we hear from you again before the close of this committee's inquiry. We look forward to seeing you either in Canberra or back here. Thank you again for your time.

[12.00 p.m.]

**LAWSON, Mr John Bernard, Principal, Lawson Consultancy Pty Ltd**

**CHAIR**—Welcome. Thank you for appearing before the committee today. I know it was a last minute decision to have you here, but we really appreciated that you accommodated us. We look forward to your contribution. Do you have any comments to make on the capacity in which you appear?

**Mr Lawson**—I am a consultant who basically works with governments. My background is actually in farming, but my professional background was in the private sector doing major studies into resources, such as gas and so on, and into major development schemes, including the Ord River. My interest is as a private consultant who has done considerable work for several governments, mainly state governments, including work on this water issue.

**CHAIR**—Thank you. Although this committee does not require you to give evidence under oath, I should advise you that these hearings are a formal proceedings of parliament and they warrant the same respect as proceedings of the House itself. We are here to remind the witnesses that giving false or misleading evidence is a serious matter and may be regarded as a contempt of parliament. Would you like to give us some briefings and details of why you are before us today? We really would appreciate it. Then the committee will ask you some questions.

**Mr Lawson**—Today, I wish to present you with some information on water recycling issues in Melbourne, particularly. I want to cover the issue of what I regard as a waste—that is, that about 55 or 60 per cent of the water that is gathered for use in Melbourne, which is 600 gigalitres, goes into the sea, both into Port Phillip, through discharges from the Werribee plant, and into Bass Strait, from the south-eastern plant. There is potential to reuse that water for a number of purposes. The main point I make is that we are short of water for urban purposes in Melbourne anyway. It would be unconscionable to take more water out of country areas, which was the original scheme of things. In the last 20 years, there has been water diverted from Gippsland and from north of the divide, to a lesser extent. I am basically saying that, if we are going to grow, as Melbourne envisages, by a million people in the next 30 years, we actually have to make much wiser use of the water we have.

The next point I would make is that technology exists to treat that water and to reuse it. There is an irony involved in water for urban uses. Henry Bolte, about 40 years ago, made the point that not one more drop would come from north of the divide into Melbourne. Of course, there was the Thompson diversion into Melbourne from the Gippsland area. The irony is that, although we look as though we are going to grow by about one million people in the next 30 years, to do so we would have to utilise the resource we have much more wisely. The problem is that, with government policy as it is at the moment, it is likely that much of that water will go back to a rural use. The easiest schemes for water reuse are basically rural schemes. The predominant use would be intensive agriculture. The point I am making is that we need both. Firstly, we need to pursue rural schemes where appropriate, particularly for intensive agricultural areas west of Melbourne, and I have some data on that which I will present to the committee. Secondly, or predominantly, we need to use it to ensure that we have adequate water

for Melbourne to grow and that the returns and so forth are significant. I will cover pricing policies and issues such as that.

In relation to a summary situation of what is happening with water recycling in Melbourne, I put together a detailed report. I put this together on my own behalf. Although I have worked as a consultant with Melbourne Water, this is my own work. Mr Schultz picked up that Melbourne Water was not appearing. I am not appearing for Melbourne Water, but I have considerable data on the circumstances of what is happening in recycling with Melbourne Water. Melbourne Water is the predominant authority in metropolitan Melbourne, and 95 per cent of the sewage treatment is handled by Melbourne Water. South East Water handles a little bit, and so do Yarra Water, Macedon Ranges Water and so forth.

I will hand out the report, which covers in detail the schemes and potential schemes. This has been prepared basically to summarise the situation and to point out approaches which we might use. During the preparation of the document, I have had discussions with Pratt Water and John Nixon-Smith and Bill and all the other parties, so I have been gathering this information for some time. The second thing that I thought would be useful, and I may use it as a presentation item, was a detailed history of water recycling. It is all the various initiatives that are currently going on. This is basically Melbourne Water data. Where I vary in emphasis from Melbourne Water and where I am talking about government things and so forth in the first report, I emphasise that Melbourne Water do not necessarily agree with a lot of what I say, particularly where I get into the structure of government's approach, which is a major concern of mine.

**Mr FORREST**—This information is under their letterhead, though.

**Mr Lawson**—Yes, it is. They are aware that I have this data and they basically said, 'It is fine for you to present this information,' because it is summary information which is semipublic information. I thought that it would be useful for the committee, if they are going to consider Melbourne and the major sort of urban use here, to have a decent database on it rather than talking generalities in relation to it.

**Mr FORREST**—If we incorporate this in some way, we are not going to have a problem with Melbourne Water, are we?

**Mr Lawson**—No. You may incorporate the information. It is public information which I had available to me. To get into the reason I am pushing what I am, I will use Melbourne Water's document because it is a good summary document and it is graphic. The only thing I take issue with is the government target. The government in Victoria has a target to reuse 20 per cent of Melbourne's sewage water by the year 2010. I am saying that you could have a much higher target and that our overall objective should be to try and reuse all of the water. I believe that, over time, that may be practical and possible.

The second graph basically shows that we currently use around 600 gigalitres. That is likely to grow, because our population is going to grow by about one million people in the next 30 years; that is the best estimate. I thought it useful to include a map which showed, on a metropolitan-wide basis, where the main intensive agricultural potential water reuse areas were. This is the map of Victoria showing those zones. The interesting thing about Melbourne, as you will see in this presentation, is that 50 per cent of Melbourne's sewage goes to the western plant

at Werribee. The good soils are basically the heavier soils to the west and northwest of that Werribee plant. So there is a match there, but there is a difficulty in relation to salt, which I will get on to shortly. The soils near the eastern plant, to which 40 per cent of the flows go, are not nearly as productive or useful for agricultural reuse. The difficulty there, for instance, is that this includes EPDZ 1 and 2, Koo Wee Rup Swamp, high peat areas, pugs and so forth. So you have to be very careful there. That EPDZ 3, on the Mornington Peninsula, is a minor area. The main soils are in the west. There are also quite good soils at EPDZ 1. The problem is: how do you get the water over there? The further east you get, you run into some good soils around Bayles, Catani and so forth.

Nitrogen load reduction is aimed at water reuse—particularly at putting the water into the ocean. There are particular problems with nitrogen, and the conditions of the EPA licence. The next graphic is about potable water reuse. It shows that 60 per cent of the water is for residential purposes, 28 per cent for commercial and industrial, and leakage is eight per cent—bits of the system are old. That is basically how it is broken up.

**Mr FORREST**—You are going a bit fast. Can you go back to nitrogen load reduction? You have lost me on the significance of what that means.

**Mr Lawson**—A major driver of recycling in Melbourne is the EPA licence and the environmental concerns—particularly the need to reduce nitrogen loads into Port Phillip Bay and Westernport Bay. What you have in Victoria are corporatised water bodies. Originally there was the Melbourne Metropolitan Board of Works, which was corporatised. Now there are retail authorities. There is Melbourne Water which gathers, stores and distributes the water in a trunk system. It handles 95 per cent of the sewage treatment and also handles rivers and main drains. One of the problems with looking at water in Victoria at the moment is: how do they meet their objectives in this corporatised world? They get their 'elephant stamp' for those things at the moment. I thought it wise to leave that in Melbourne Water's words. I think that, in a more holistic sense, you can address that in a different sense. That is one of the issues that intergovernment agencies need to address.

**Mr FORREST**—So, instead of investing in all of the capital to achieve that, your proposal is to reuse it—is that what you are trying to say?

**Mr Lawson**—Absolutely. That is the point I was coming to. Going back to the recycling opportunities, in this document that I put together—and keep in mind that I was trying to alert the government to the fact that, if it just simplistically—

**Mr ADAMS**—What page are we on now?

**Mr Lawson**—This is the page with the heading, 'Recycling opportunities—context', where the map showing the treatment plants and the dot points 'urban developments', 'agricultural schemes' and 'recreational' are. I am not going to go into it in detail because it is all there. But what I have done in this document is demonstrate in great detail how you could actually introduce third pipe systems in Melbourne—I have further details of that in this Melbourne water data—so that all new subdivisions could be supplied with recycled water. That applies right across urban areas, whether regional or metropolitan. The importance of that is that, if you had the water to a decent quality and you ensured that it did not have too much salt in it so that

it could be used on gardens or for agricultural purposes, 50 per cent of the potable water supply in most of these cities could actually be recycled, because 31 to 35 per cent of water in Melbourne goes on gardens and 14 to 19 per cent is on toilet flushing.

I have been responsible for a lot of new subdivisions in Melbourne. My background, and how I came to join government, was that I started up and ran a thing called the Urban Land Authority. At one stage we had about 20 per cent of the Melbourne market. Previously, I was with Jennings. So I am used to developing very large scale urban developments. At a minimal cost we can bring in a third pipe to those. What I demonstrated in that report was that, in all new development in Melbourne, you could actually save a very significant amount of potable water and address the problems that we currently have with water shortages and growth and so forth through fitting this into new subdivisions. We have done considerable studies on that and I have been involved in a number of those studies. So that is the point I am making about urban uses. The agricultural schemes—and I will go into those in greater detail—are the western scheme and the eastern scheme.

Another potential limited reuse is in clusters of industrial development. For instance, in the Altona area we are using water for cooling and other industrial purposes. Recycled water is ideal for that purpose. So schemes we are looking at are a Dandenong cluster and a Williamstown-Altona cluster for water reuse. That data then summarises the issues with the two main plants. The main problem with the western plant is that, for a number of reasons—and further information on it is contained here—particularly because 90 per cent of Melbourne's trade waste goes into the western plant, the total dissolved solids, mainly salts, is 1,000 parts per million. The difficulty there is that, if you deal with clusters or with the major intensive agriculture people, we need to get down around about 650 or 700 parts per million. So there is a problem with the western plant currently with high salt content. There is no problem with the eastern plant.

**Mr FORREST**—Why is it salty? Is it sucking salt in from the ground water?

**Mr Lawson**—No, a bit of the problem is leakage—this is mainly on the next page—but it is the 90 per cent of industrial trade waste and the fact that the EPA licences never worried about it in the past, because the water went into the sea. Government must address that question. What I am saying is that you need a whole-of-government approach. The western plant projects are summarised there. The major one is the Werribee irrigation plant, which is currently supplied from other sources, and the Balliang plant. Then you have all of these industrial ones.

I have talked about water quality. There is further detail there on the plan to use 30 gigalitres in the western plant for agricultural purposes. The next few pages are a graphic of how that could work. I could tell you a similar story in relation to the eastern plant. The gross margins for selected crops with regard to the ability to pay for water are a major issue in relation to treated water. By and large, we believe we can treat the water for about $300 per megalitre. So it is very marginal—$300 or $350—and Melbourne Water has no doubt given you data on that. So you do have a problem with what you can pay. Generally speaking, it is wine grapes, apples and other intensive agriculture.

The next page is about the third pipe system, and then there is other information in relation to water reuse which specifically applies to the metropolitan area. The eastern plant process is

discussed towards the back of the presentation. I apologise for not numbering the pages. The bones of the Eastern Irrigation Scheme are there, and then there is some stuff about sewer mining and so forth. Right at the back, on the last few pages, there is information on contaminants—which you raised, Mr Forrest—going into the sewerage system.

You will see that the great bulk of the contaminants comes from industry. If we are going to reuse this water, particularly the water out of the western plant, a major thrust in Melbourne will have to be directed towards getting rid of the heavy metals and so forth. I have been talking to Pratt Water for some time about this. Pratt Water proposed doing a major study into that issue in association with the state government. I suggest there is room for Commonwealth government involvement of one sort or another in that issue, because if you wish to use the 350 gigalitres you have got to tackle that problem. I have come up with an interim dilution approach, as described in this document.

On the fourth last page there is information about water pricing in Victoria. There is a real issue about pricing which the Victorian community, government and authorities need to face. Often you will get situations where there is a real mismatch and, unless you do something about it, it is very hard to get viable schemes happening. The assumption in relation to health is that you would meet all viable health standards.

I have one other general comment, which is about how the Commonwealth can get involved in this urban issue. The Commonwealth is involved in roads, health, and a number of issues. My contention is that water is the major issue immediately facing the Australian cities and the Australian nation. It is a major new issue. Unless the Commonwealth is involved in the issue—for example, through water bonds, which you could apply in a metro context as well as a rural context—it will be very difficult to tackle. If you look at the price of the various schemes, with most of the schemes we are talking about here—such as the Balliang scheme, which costs about $110 million or $120 million—you can get large economic returns, particularly with intensive agriculture and closeness to markets and so forth. So I think there is quite a role for the Commonwealth.

There is another simple issue which I will raise. Part of the source of the salt into the Melbourne metropolitan and Sydney systems and so forth comes from the domestic load from detergents. One of the problems with detergents is that they are high in sodium content to soften water in cities like Adelaide. I work in Adelaide. You could change it by regulation. The market has not responded to that need, but if it were encouraged to do so we would reduce considerably the amount of salt going into the western plant and the other plants, as well as into markets like Sydney or Brisbane, where you have got soft water anyway. There are simple things like that. One of the problems is that governments want to do the right thing and they want to be seen to be doing the right thing but, at the moment, the whole thing is not coordinated. It needs to be brought together. I will stop at that point.

**Mr WINDSOR**—I agree with you that a lot of the simple things are the things we should be addressing first. But this third pipe idea that you have is not a new concept. In terms of the economics of that on new developments, and bearing in mind that you can get 50 per cent savings in potable water, when does the break-even curve occur? What do you have to do to the price of water to make it happen?

**Mr Lawson**—You have to get the water quality right. What I demonstrated in my report was that by 2005-06, providing we address the salt issue on the western plant—we can do it by dilution initially—I believe we can bring in mandatory third pipe in Melbourne by 2005-06. By then we can cover all the health aspects. You cannot have a third pipe unless you allow for the fact that someone might drink out of it. You have to make sure that pathogens and so forth are reduced to a safe level.

In addition costs for a third pipe would be not much more than $2,500 a block—it is not excessive. But the point is you need to point out to developers that—and I have gone round the development industry and come out of it—if you want gardens in your new subdivisions, and they invariably do on the fringe of Melbourne, you cannot have a garden unless you do this. Currently we do not have the water to service it—the drought is proof of that. It is very easy for new subdivisions to fit a new pipe system. The difficulty is retrofitting existing areas. That is very expensive. You can do it on major redevelopment sites, major parks and so forth.

I calculate that you could get 40 per cent reuse in Melbourne over time for industrial and new subdivisions and then gradually in major redevelopment issues, where you put the pipes up the main stream lines. For instance, there is a scheme to bring a pipe around the bay from the eastern plant which would transfer treated effluent, pick up all the parks and gardens around Melbourne and bring the surplus round to the western plant. What you do not use for urban purposes you would use for agricultural purposes where your soils are good. So the prospects for breaking even are fairly good. We are moving very quickly on that issue.

**Mr FORREST**—Do you think it is possible to drive a policy like that without having a third tier of pricing? You might have 40c a kilolitre for the first 100 kilolitres, 80c a kilolitre for the next 200 kilolitres, but $5 a kilolitre to try and drive people to water their gardens only with this water. I do not share your optimism that it would happen naturally unless the pricing structure of water was resolved.

**Mr Lawson**—In new subdivisions the developers are prepared to do it. Where a two-tiered pricing policy would be very useful is in—

**Mr FORREST**—I am talking three tiers.

**Mr Lawson**—Well, you can go three tiers. But it is in large outer metropolitan areas that that would be useful. In some retrofitted permanent stage 2 areas in Melbourne, if you want to water your garden, you pay a differential price. I totally agree with that. I think you are right that you would have to use pricing mechanisms. But in relation to a third pipe, you would pay a lower price from the $750 a megalitre for potable water at the moment—you might be down around $600 a megalitre or something like that—but it is still quite viable. We have done enough studies to prove that now.

**Mr SCHULTZ**—I notice the comment in your submission about the dilution of salts and provision of greater volumes of recycled water to the region. You put up as one suggestion capturing run-off from major storm events during summer months and diverting it into the sewerage system. How is the sewerage system going to be able to cope with that influx of additional water? What is that going to do to the sewerage system? I say that in the context that a number of sewage treatment works throughout the country have an enormous amount of

problems because of illegal taps into the sewerage system from, for example, rainwater run-off from residential homes.

**Mr Lawson**—It is not an issue in the summer, when you have very low flows, and partly because of the infiltration from rainwater and so forth. I have put together a number of large subdivisions—including Roxburgh Park, which is the biggest subdivision in Melbourne—with a system which treated the run-off. So you gather it. I put together about five of those systems in large estates round Melbourne. It would be very easy to collect it and, instead of letting it just go down the stream, actually put it in the sewer. But you are controlling it. You have very low flows during the summer. You are down to about 60 per cent of flows, from memory, so you have spare capacity there. You would only do it when you had spare capacity. You certainly would not open the valves in the winter.

**Mr ADAMS**—You have had experience with the privatisation of Melbourne Water, or the breaking down of the old system. Would you like to give us a rundown on how you think things have worked out?

**Mr Lawson**—Only as somebody who was running government agencies at the same time and somebody who works a lot in South Australia. South Australia is a pressure point when you look at privatisation schemes—the electricity scheme, for example. In the water industry what has happened is that you have the idea of competition between private water authorities. In Britain in 1910 you often had five pipes going down the one street. The British system was all brought together and then it was privatised in the eighties. It has not worked very well. Britain has real problems with water. The irony in South Australia is that, because it has rights for water, I am never conscious of the fact, as I work around Adelaide suburbs, that there is a water shortage. There are no water restrictions. And yet in the end Adelaide's growth will be restricted because of the lack of water.

The other irony there is that 50 per cent of the sewage water, on a quite interesting basis, has been devoted to the much heralded Virginia scheme. I am saying to them in Adelaide: 'If you want to grow in Adelaide, you may have to capture some of that water back. Keep your Virginia scheme, but the rest of the water you may have to devote to urban purposes along the lines I outlined for Melbourne.' The privatisation has been a bit of a mixed thing. One of the problems is that you then need a whole-of-government approach between the EPA, the privatised authorities and so forth, because they get their bonuses or their elephant stamps or whatever it is for very limited objectives in the way it was set up. That needs to be revisited. I hope that the government will revisit that issue with their Department of Sustainability and Environment. It is a major issue in resource allocation and approach.

**Mr WINDSOR**—I was in Adelaide last year. They are transferring some of the stormwater off urban and industrial areas into ground water aquifers after going through some sort of artificial wetlands. Alby asked you about putting stormwater run-off back into the sewerage system—and you only do it in the summertime because of the excess; you cannot do it in the wintertime. Are there any ground water systems that could be utilised to hold that water, as they are doing in parts of South Australia?

**Mr Lawson**—Yes, and, in fact, I am involved in a couple of those things in South Australia. But there is a major study that was done looking at the western aquifer. The problem is that you

really need water for gardens, basically, in the high-summer months. You also need it for intensive agriculture in the summer months generally. How do you store the water? It is very hard to get above 40 per cent reuse unless you store the water. A preliminary study has been done, partly by a private group in Melbourne, looking at the western aquifer. Basically, the problem with the aquifer there is that it is quite saline—it is up around 3,500 parts per million—but you get a zone of exclusion around it. I came out of the oil industry, actually, and if you pump water down into the aquifer you get sort of a bubble effect. That needs to be studied further. Studies in South Australia and Western Australia which I am aware of indicate that, as in the oil industry, you can resolve that issue. The interesting thing is that discussions we had recently indicated that you could get water at around $450 to $500 per megalitre. It is the pumping that costs you the money, not the technology. But I know what they pay in the MIA, where they are pumping out of the ground water and so forth and using a cocktail. The pumping costs on that are often pretty high, too.

**Mr FORREST**—This is really interesting. Thanks for your information. A lot of our problems are created by the process we use to dispose of sewage, hydraulic sluicing—the same way the Romans did it 3,000 years ago. Surely, the huge cost of that and the problems it is creating, which we are talking about, warrant research into other disposal mechanisms. Is there potential to throw all that out and start again? In a spacecraft, they do not sluice it. It seems to be something that has plagued our modern societies for too long.

**Mr Lawson**—It is horses for courses, Mr Forrest. If you look at the western plant you will see that it is basically a pond system. The eastern plant is an activated sludge system. It is less energy efficient, yet it produces quite high-quality water, and the scheme is to bring it right up to scratch and then pump it into the sea. I think that is madness. The anomalies in the system at the moment are why I do not just work for Melbourne Water. At the moment, looking at Melbourne and potential schemes out of that eastern plant, the idea is to pump that right across into the better soils in the Bayles area. That is going to cost about $50 million. Coincidentally, you will see in my report there that I pick up the fact that they intend to transfer out of the pond system at Pakenham, which is north-west of that Bayles area but quite close to it. They intend to pump that across to the eastern plant and then send it out the outfall. They intend to extend the outfall a further two kilometres into the sea at a cost of $65 million. This is madness. We could save those moneys and better use them on positive schemes instead of just cleaning up our act and putting the water into the ocean. I did not really answer your question directly, but they are the sorts of issues involved. I think that part of the studies that are going on will examine technologies, but they are all trying to save energy. That is the problem with reverse osmosis.

**Mr FORREST**—The question I am asking, though, goes right to the start. We spend billions of dollars, we get this WHO quality water, we send it into the cistern and we flush it down the dunny. We create a whole new problem. That is where I think we ought to be investing some better thought. We have the cost of getting the water into a good condition and then we go and deteriorate it to that extent.

**ACTING CHAIR (Mr ADAMS)**—I think we have to start pulling it together.

**Mr Lawson**—I agree. We need to study it.

**ACTING CHAIR**—Thank you very much for your time. There are many studies that we continue to need. Thank you for appearing before our committee and giving your evidence. I appreciate it very much.

**Mr Lawson**—Thank you for your time.

**ACTING CHAIR**—The committee receives the documents presented by Mr John Lawson, entitled *Managing Melbourne's water resources: water recycling to protect the environment and support Melbourne's growth* and *Recycling in Melbourne—History*, as exhibits and authorises them for publication.

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

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

**Committee adjourned at 12.41 p.m.**