REPORT OF PROCEEDINGS BEFORE

GENERAL PURPOSE STANDING COMMITTEE No. 5

INQUIRY INTO A SUSTAINABLE WATER SUPPLY FOR SYDNEY

———

At Sydney on Friday 10 March 2006

———

The Committee met at 10.00 a.m.

———

PRESENT

Mr I. Cohen (Chair)

The Hon. R. H. Colless
The Hon. G. J. Donnelly
The Hon. P. Forsythe
Ms S. P. Hale
The Hon. P. T. Primrose
The Hon. H. S. Tsang

CHAIR: I welcome everyone to the first public hearing of the inquiry by General Purpose Standing Committee No. 5 into a sustainable water supply for Sydney. Before we commence I would like to make some comments about proceedings for today's hearing. The Committee will hold further hearings on Monday 20 March and Thursday 23 March. The witness schedules for those hearings should be available on the Committee web site very soon. A transcript of today's evidence will be placed on the Committee's web site for public and media access. It normally takes about a week before the transcript is available on the web site.

The Committee has previously resolved to authorise the media to broadcast sound and video excerpts of its public proceedings. Copies of guidelines governing broadcasting of proceedings are available from the table by the door. The benefit of the media present, in accordance with Legislative Council guidelines for the broadcast of proceedings, members of the Committee and witnesses may be filmed or recorded. People in the public gallery should not be the primary focus of any filming or photographs. In reporting proceedings of this Committee the media must take responsibility for what they publish or the interpretation placed on anything that is said before the Committee. Witnesses, members and their staff are advised that any messages should be delivered through the attendant or the Committee clerks.

I also advise that under the standing orders of the Legislative Council any documents presented to the Committee that have not been tabled in Parliament may not, except with the permission of the Committee, be disclosed or published by any member of such Committee or by any other person. The Committee prefers to conduct its hearings in public. However, the Committee may decide to hear certain evidence in private if there is a need to do so. If such a cases arise I will ask members of the public and the media to leave the room for a short period. Finally, would everyone please turn off their mobile phones for the duration of the hearing. I now welcome our first witnesses Mr Ian Kiernan, Executive Chairman of Clean up Australia, and Ms Gabrielle Kay, Clean Water Campaign Manager for that organisation.

IAN BRUCE KIERNAN, Executive Chairman, Clean Up Australia, 18 Bridge Street, Glebe, and

GABRIELLE KAY, Clean Water Campaign Manager, Clean Up Australia, 18 Bridge Street, Glebe, affirmed and examined:

CHAIR: Mr Kiernan, in what capacity are you appearing before the Committee—that is, are you appearing as a private individual or as a representative of an organisation?

Mr KIERNAN: As a representative of my organisation, but also as a concerned citizen.

CHAIR: Are you conversant with the terms of reference for this inquiry?

Mr KIERNAN: Yes.

CHAIR: Ms Kay, in what capacity are you appearing before the Committee—that is, are you appearing as a private individual or as a representative of an organisation?

Ms KAY: As a representative of Clean Up Australia.

CHAIR: Are you conversant with the terms of reference for this inquiry?

Ms KAY: Yes. I am.

CHAIR: If either of you should consider at any stage that certain evidence you wish to give or documents you wish to tender should be heard or seen only by members of the Committee, please indicate that fact and the Committee will consider your request. If either one or both of you would like to commence by making a short statement on your own behalf or on behalf of your organisation the Committee would appreciate that. That will be followed with questions from Committee members.

Mr KIERNAN: Thank you, Mr Chairman, and thank you members of the Committee for the opportunity. I take it very seriously because it is a very serious issue. As Executive Chairman of Clean Up Australia I have a personal commitment and I feel a responsibility to empower the community towards understanding the water issues that face us. We know that Australians are not very keen on being told what to do, but we know that they crave information so that they can make their own informed decisions. That is the way we want to proceed. I have undertaken to fearlessly pursue water reform. The situation currently is an absolute disgrace. We have enough water it is just that we manage its so stupidly. The record of Sydney Water Corporation in relation to reuse and recycling is nothing short of pathetic. What have they been doing for the last 10 years? Nothing. Only 2 per cent of effluents are recovered and recycled.

I was involved in the Expert Water Panel and we delivered the recommendations from that Panel. The report has not been published, which is a disappointment, and I think few people have read it. Those who have and are informed seem to think that is a worthy report. What that Expert Water Panel report recommends should ensure a balance of sustainable water plan for the next 20 years, and that is what we need. This is about developing a blueprint for the future of Sydney Water Corporation. Heavens above, they really need it! Credit where credit is due, the New South Wales Government has enacted some policies and actions that start to address the challenges, but more needs to be done—again, as outlined in that Expert Water Panel report as the blueprint for the future.

At Clean Up Australia we have a history of always working with the government in office at the time—the Greiner Government, the Fahey Government, the Carr Government and now the Iemma Government. When the desalination issue exploded I found it necessary to go head-to-head with the Government. I did not relish doing that, but I felt morally bound to do it. I believe now that the fence may be mended, because I think that the current Government is seeing the good sense in the recommendations of the Expert Water Panel report. What we need to realise is that climate change is upon us as the most horrifying threat imaginable. One of the first things that we have to do is learn to live with climate change; to start to improve our water management, our energy management, and our resource consumption. We have to do that as the first step.

What I want is to ensure that the right action is taken in the implementation of the Expert Water Panel report to ensure that the dams never get below 30 per cent. If the recommendations of the report are followed, the dams will never get below 30 per cent and the desalination option is simply an academic argument. As the Expert Water Panel report says, it is about discovering new water in the first place. We had four priorities. The first place to look is towards industry, industry that is consuming drinking water for industrial purposes, polluting it, then paying trade waste, environmental, and polluter-pay levies, and then disposing of it carelessly in the ocean. If industry can be attracted to look at recycling water it is consuming by way of potable water, that is going to be of huge benefit. But there is no silver bullet here; there has got to be a range of actions.

The next place we need to look is stormwater. Stormwater management is difficult because you need storage, but with clever and ingenious attention we can achieve that over this range of actions. We talk about rainwater tanks and about grey water reuse. All of these things can play a role. The next place we need to look is a sewer mining where we are taking 420-odd gigalitres of crystal clear drinking water, polluting it with human waste and dumping it in the ocean. That is the equivalent of what Sydney consumes in potable water every year. So, we need to look at that. The fourth place we needed to look was at desalination, because we could not ignore the option, but it was the least favoured and least acceptable option.

We need to look at other things. We need to look at the Sydney Water Board. Who are these faceless people? Where were they? This is an independent elected board. Where were they during the desalination crisis? Where were they when the debate on planning was raging? I ask that question: Where were they? We need to look, as well, at other clever things. What about the environmental flows that we need in our river systems, particularly the Hawkesbury-Nepean? What is happening now is that the environmental flows are being drawn from Warragamba and flushed into that heavily polluted river. We have world's-best environmental practice now at St Marys and at Cronulla. Why is the St Marys water not being cleaned up to adequate standard and used to replace what is coming out of Warragamba? It seems pretty simple to me.

What about the upgrade of Penrith? Why do we not look at that? What about the opportunity of selling water to agriculture and industry from these recovered effluents? There is also a need to remove inappropriate regulations and for government agencies to work together towards common goals. How do we achieve all of this? What I want to recommend is that the Premier arrange the formation of a top-class, independent scientific panel of a brutally practical nature to ensure that the levels of education and practical reform set out in the Expert Water Panel report are actually implemented. I think it would be great if the Premier were to invite our Queensland and Victoria counterparts to join that panel because we can learn from each other.

I also believe that given the right level of education and information dissemination, in five to 10 years we will be drinking highly treated effluent that is introduced into the back of Warragamba Dam. What is happening now? Lithgow sewage treatment plant drains into Farmers Creek, goes into the Cox's River and then into Warragamba Dam. What happens with the people of Richmond and Windsor when the St Marys and Penrith effluent goes into the mighty Hawkesbury and Nepean? They are drawing drinking water from the Hawkesbury-Nepean and drinking it. We are already drinking our effluent, just as they are in so many other countries. I have heard the argument that you cannot do direct injection of recovered effluents, and I agree with that. But if it is introduced into the back of Warragamba Dam the water that is introduced will be cleaner than that which is in Warragamba Dam now. We then have the protection of the Prospect high quality treatment plant. That is the direction I want to go.

I thank you for this opportunity. I pledge to you that I am absolutely committed to the reform of water management in this State. It is a disgrace at the moment.

CHAIR: Ms Kay, do you have anything to add at this point?

Ms KAY: No, thank you.

CHAIR: Thank you, Mr Kiernan, for your obviously passionate comments. I appreciate it, as I am sure do many members of the committee and the public. It is a debate that has to happen. We are

pleased to have you before us today and hopefully we can broaden the debate in some areas you have mentioned. On page 2 of your written submission you mentioned access to unused sections of water storage reservoirs. Do you have specific areas in mind? Is there infrastructure around Sydney that is unused at present where there is opportunity for storage? It is an old shibboleth, but is the north side sewerage tunnel something you have in mind?

Mr KIERNAN: Sydney Water has a number of disused assets. There is a 10 megalitre heritage reservoir underneath Balmain that is maintained but not used. There is a huge reservoir at Centennial Park that also is heritage and I do not believe is used. We need to get clever. We know that dual reticulation is impossible in the built environment from a cost perspective but there are still clever things that we can do. We put in a water re-use plant at Taronga Zoo. The animals are now drinking and swimming in their own effluent and recovered stormwater. The diligence we had to apply there was substantial because if I had come in Monday morning and all the giraffes' legs had been sticking in the air it would have set re-use back about three light years. We got it right. I have to admit that Sydney Water helped us there, so they are not all bad.

CHAIR: That was a raw sewage outlet into the Harbour at one stage before you instituted that program.

Mr KIERNAN: Exactly. At Clean Up Australia we have now instituted some $30 million worth of similar and comparable projects. We have a Clean Waters Program and we are going to keep doing this because we need to show people what science and technology can do and the fact that the cost of science and technology is coming down.

CHAIR: On page 11 of your report you talk about a labyrinth of regulations. Can you give the committee some information, particularly about issues that may arise with the Health Department? How relevant is the Health Department and how do we deal with this situation both in terms of real health in delivery of potable water and the public perception? What are the problems in dealing with various bureaucracies and old laws?

Mr KIERNAN: As I mentioned in my remarks, we need the agencies to get together and co-operate. Health has always been a very conservative authority, and it needs to be to some extent because we must absolutely protect the health of the community. That is why we need to apply the correct level of due diligence. We must have a level of co-operation from Health because otherwise it will be the wall that stops us proceeding to re-use. Five years ago it was illegal to have tank water in your house. We have seen local government relax that and we have seen the good sense of that being established. I have a rainwater tank in the terrace house where I live and it costs me $7 a kilolitre, but I do not care because I want to make a contribution. There are people who can afford it who will do these sorts of things.

We have to break down the barriers and I think the practical expert scientific water panel can help that. When we did Taronga Zoo we went to the Environment Protection Authority and said, "Give us your re-use standards." They said, "We don't have any." We said, "Okay, get some." They were good people; they went away and came back two weeks later and threw them on the table. They were absolutely stringent. They had raised the bar to such a level, but we were able to meet that. The same should apply to Health. Give us your regulations and we will meet them but do not put up a stone wall to keep us out.

CHAIR: You talk about bringing water up to potable standards in the various aspects of re-use. What about the argument of primarily focusing on non-potable standards, which would be a cheaper and perhaps more effective way and would release the potable water for drinking re-use? Could you perhaps elucidate on the balance of that debate?

Mr KIERNAN: Certainly. I have said that we need a range of actions. When I see the almost clear effluent from Cronulla going past industrial installations and into the ocean it makes me weep. I spoke about environmental flows instead of taking them out of Warragamba Dam. That is not the answer to the problem but it is part of the answer. Sewer mining and stormwater are part of the answer, as is selling non-potable water to industry. If you look at the projected increase in the population of greater Sydney, I believe we will have to go to potable re-use.

We can replicate what nature does now. Nature will take the most polluted saltwater or industrial water and clean it up into sparkling drinking water. We can do the same with science and technology and we can give the guarantees and thus avoid the liability. It has to be a whole range of things. We need a range of water products. Certain industries, such as the computer industry, need ion-free water. Look at what we were able to achieve at Coffs Harbour with re-use: 100 per cent uptake of dry flow effluent for 35 kilometres. The farmers are complaining there is not enough nutrient in it. We have cleaned it up too well. That was how the bar was set and we met it. It is about being clever, it is about being smart, it is not about finding reasons you cannot do things, it is about finding reasons how you do things. That is the attitude I am applying to it.

The Hon. RICK COLLESS: Thank you for your very interesting paper and address, Mr Kiernan. When you talk about the dams never falling below 30 per cent again, what population growth are you assuming? Surely there must come a time when we will need more water than is available from all those suggestions you have made?

Mr KIERNAN: Yes. If you look at the 415 gigalitres that goes out in the ocean outfall and all the difficulties of reticulating it, that is the freshwater consumption of the city of greater Sydney now. I am not saying that we can achieve 100 per cent re-use of that but it is a very good place to start. Look at the stormwater that runs down our drains. We have twice the rainfall of the city of London. That is somewhere else we need to look. With the projected growth of greater Sydney we will have to find additional water from this range of sources and that is why I believe potable re-use is the answer to that.

The Hon. RICK COLLESS: I understood the total water use in Sydney was closer to 600 gigalitres than 420 gigalitres. That is the amount that goes into the outfalls.

Mr KIERNAN: There is some conjecture. Some say 500, some say 600, but we know 415-420 is going into the ocean.

The Hon. RICK COLLESS: Whatever the figure, 500 gigalitres or 600 gigalitres, how much do you consider can be effectively re-used?

Ms KAY: Of the ocean outfall? All of it.

The Hon. RICK COLLESS: No, sorry. Of the total amount of water that we use now—let us say it is 600 gigalitres—how much can be reused? Is it only what is going out of the ocean outfalls?

Ms KAY: No. Ian has given examples of different sewerage water plants at Cronulla, Penrith and elsewhere where there are many opportunities for water to be reused.

Mr KIERNAN: And the Warragamba environmental flows.

The Hon. RICK COLLESS: Stormwater is an interesting issue. In an urban environment the coefficient of run-off is probably something like 75 per cent or 80 per cent. So of every millimetre of rain that falls you can collect 75 per cent or 80 per cent. Have you done any calculations on how much stormwater could be harvested in the city in terms of quantity?

Mr KIERNAN: I have not, no.

The Hon. RICK COLLESS: It must be an enormous quantity.

Mr KIERNAN: It must be huge. But we are looking at a new project that would look at stormwater harvesting in a major way and use the old cooling tanks underneath the power station at Pyrmont. That was saltwater cooling but it could be locked off and used as a massive storage dam. It is a matter of getting clever about how you manage to reticulate it.

The Hon. PATRICIA FORSYTHE: I have three questions. You may not be able to answer my first question specifically, Mr Kiernan. As a board member of Taronga zoo, did the recycling and reuse of water at the zoo add to operating costs at the zoo? If so, can you elaborate on that in general terms?

Mr KIERNAN: Sure. I raised the money for that project. It was $2.5 million, which we got pro bono. It saved the zoo a couple of hundred thousand dollars a year in fresh water that they did not need. The gardens are watered with it, the toilets are flushed with it, the animal cages are hosed out with it, and the recreational lakes and dams, often where the animals excrete, are filled with this water. Then it is cleaned and reused. Technology has moved ahead. That was seven years ago. We are looking at an upgrade because, with the huge expansion at our wonderful zoo, their water demand is going to increase and we want to match that. We are keen to do that. To answer your question, I believe the result for the zoo was cash positive. Energy demand increased a bit but I think that would have easily been covered by the reduction in the amount of potable water purchased.

The Hon. PATRICIA FORSYTHE: Thank you. On a quite different matter, in your submission you refer to the belief that restrictions on the hosing of hard surfaces and excessive garden watering should remain because it sends a positive message to the community that water is scarce. I put it to you that for people in the community the ability to clean the grime from their walls or the moss off their tiles is equally important as watering their roses. Why should there be restrictions on how people use water as opposed to the time of water use?

Mr KIERNAN: That is an interesting question. What I liked about the restriction on watering hard surfaces and the reduction in the irrigation of gardens was that the community responded to it magnificently and made a serious reduction in their water consumption. I think it is very important to have that public-private partnership. As to the matter of cleaning grime and washing down walls prior to painting, I think application can be made to Sydney Water so that you are permitted to use water in that way. How difficult that process is I do not know but I really like the restrictions being there and the community partnering in it. Of course, if you bring in a contractor that has a water licence there will not be a problem. But that may be impractical from a budgetary standpoint.

The Hon. PATRICIA FORSYTHE: I keep looking at my green tiles. Finally, you have described Sydney Water's efforts over the past 10 years as "pathetic". How much more do you think the community would be willing to pay for water if we were to invest in capital?

Mr KIERNAN: The water in the jug is $1.03 a tonne and the bottled water is $3,000 a tonne. Water is too cheap. I think the pricing tool is useful. But what happens with the family of six struggling on $30,000 a year? An increase in the price of water will be very difficult for them. I believe we are paying more for our water than we pay through our rates. I think we are paying it in other ways. We have seen an increase from 87c to $1.03 and I think we will see further increases. I think we need to look at relief for battlers so, like a pensioner, they get some sort of reduction if they are below a certain income level and above a certain family size. I think that would be fair and reasonable. How difficult that would be I do not know.

Ms SYLVIA HALE: Councils currently provide such rebates to pensioners and others so presumably, if they can do it, it is not an impossible suggestion.

Mr KIERNAN: Sure.

Ms SYLVIA HALE: It is certainly one idea that I think needs serious consideration. On page 12 of your submission you say that Clean Up Australia has serious doubts about the Government's arrangements for Sydney Water. You have spoken to some degree about that this morning. Would you like to be more specific as to the ways in which you think changes should be made to Sydney Water?

Mr KIERNAN: Yes. I would like to see industry having a better opportunity to show what it can do in relation to water reform and better water management. We have, over a succession of governments, seen the special dividends taken out of Sydney Water's coffers. That is our money and it causes me great concern. All governments over the past 20 years have done that. I would rather see that money ploughed back into repairing the ageing infrastructure and installing new infrastructure.

The board of Sydney Water would not exist in the private sector; they would die. They would fry in the sun. They are meant to be managing our asset and I do not believe they are. We did not hear

a peep out of them during the desalination plant debate. We did not know what their position was. Through the planning issues where are they? I think the problem is that Sydney Water is in the business of selling crystal clear drinking water to anyone who will buy it for any purpose they want. They need to look seriously at reform and the best way to achieve reform is by bringing in the private sector in the correct way. We do not want another cross-city tunnel, but it could be done in the correct way.

CHAIR: Are you saying that the culture of Sydney Water is such that the organisation cannot be reformed at this stage?

Mr KIERNAN: It seems very difficult. Look at it: They sell us drinking water at $1.03 a tonne and they take our sewage at whatever it is—close to $1 a tonne. They then have the convenience of scant treatment—minimal treatment. They have 30 per cent collection of solids at North Head and then they have the convenience of dumping it in the ocean. If they go to reuse it has got to be 100 per cent collection of solids and that will affect their bottom line. So I do not think they are very willing to address reform. It is a difficult situation.

CHAIR: How much of this would be due to the original trade waste agreements and the fact that we are putting out to ocean a product that is far more chemically active than simply sewage in water?

Mr KIERNAN: I think to the credit of Sydney Water—and I do not often make statements like that—the trade waste policy it put in place in the late 1980s was very effective. At that time people did what they liked. Sydney Water went out and did audits. They looked at how commercial benefit could come back to industry by its being responsible for cleaning up its own trade effluents. I know that the quality of effluents today has hugely improved upon what it would have been in the 1980s. So that is one plus. But why not go the extra step?

Ms SYLVIA HALE: You suggest that the way forward is to involve private enterprise. But if one of the difficulties confronting Sydney Water is the obligation to return a profit to the Government surely the need to make a profit would equally hamper the activities of any private company.

Mr KIERNAN: I would expect that the appropriate company, through its reform, would greatly improve the efficiency of the organisation and that should reflect in the bottom line. Of course they have got to have a profit; they are not going to do it for nothing, but the deal has got to be properly constructed so that it is not a rort, like some of the commercial bankers have been known to do.

Ms SYLVIA HALE: Except that overseas in Latin America, Italy, France or wherever, the privatisation of the water supply has had quite calamitous impacts upon communities.

Mr KIERNAN: I am familiar with the facts of that and I think that that needs to be managed so that the community is not subject to unfair pricing and being ripped off, and I think that that can be achieved. I believe it is possible.

The Hon. HENRY TSANG: You mentioned privatisation, hospital reform and privatisation of Sydney Water. Is there any city or country that has done that successfully without increasing the prices too much, such as Qantas, which all sounded very good but people ended up losing jobs and services got worse, and there were problems with safety. Can you tell us about any successful examples?

Mr KIERNAN: I have seen examples that are a lot more successful than the model we have got here in Sydney and that would be in Melbourne, where they have a number of utilities that are competing with each other. The fact that they are embracing new technologies and better methods of managing their water is really encouraging. If you look at Melbourne City Council, it is just refurbishing a 14-storey building where they will be reusing their black water and their grey water right through that building. That is courageous and is clever. So I think we can learn a lot and that is why I suggested that the States of Queensland and Victoria be invited to join our panel. There is a

wealth of knowledge and understanding out there. There is no one quick-fix solution. It is just about better management and embracing better technologies, the pricing tool and all of these things.

The Hon. HENRY TSANG: The world looked at the Sydney 2000 Olympics, the Olympic village and our development and saw us as a clean, successful, green Australia. They regarded us as quite good at it. Has our technology or knowledge been exported?

Mr KIERNAN: I think the fact that we were able to have Olympic events in the Harbour in a city the size of Sydney was fantastic and the world has picked up on the dioxin problem, which is at Homebush Bay. I think the things that were done at the Olympics, like the hard water recovery, the storage of it and the brick pit were fantastic, but I thought more could be done.

The matter of the dioxin is a major, major problem and the reason for it is that Sydney Harbour, very early in its European history, became an industrial sewer and anywhere that you had heat from gasworks or smelting or industry in the presence of carbon and chlorine, which is in seawater, you can produce one of seven examples of dioxin, and that is what has happened. If you look at the Rhodes Peninsula and the gasworks sites, they are hot spots of dioxin.

Of course, what happens is that dioxin is not soluble in water; it is soluble in grease or oil and when it becomes soluble, it attaches to the sediments. So you get a layer of sediment on the floor of the harbour. It is the crustaceans that come and eat that sediment, the fish that eat the crustaceans and it is us that eat the fish. That is why the report that came through saw the banning of fishing in Sydney Harbour. What needs to happen is that those hot spots, those point sources, have got to be knocked over. If we can do that, then we have got a chance that eventually the level of parts per million of dioxin will start to decrease.

The Hon. HENRY TSANG: Do we have the technology to do that?

Mr KIERNAN: Yes, we have the technology. We tried very hard to get the right technology at the Union Carbide site with Clough and Dow and a really clever new technology but it did not happen and they used another technology. On one side we have got everyone saying, "Look at that beautiful harbour. It is so clean and wonderful" and on the other side we have the next frontier, which is the heavy metal and organochlorines that are resident there.

They have now been locked in by new sediments but then it has been supposed that it is the RiverCats that are disturbing the sediments and releasing the dioxin. Now, I have seen no hard evidence to say that that is correct, but it is a problem and it is going to have to be cleaned up eventually because whoever owns that property, owns the liability and the value of that property will not be captured until the liability is removed by cleaning it up. So there are commercial reasons for doing it, which we are seeing at the Rhodes Peninsula. But I think that the Government needs to keep it under the microscope, keep the attention on the issue.

The Hon. HENRY TSANG: In terms of the costs of water, our water is quite inexpensive compared to New York, London and Berlin. Is our water so relatively cheap that we could actually raise it a little bit without changing our world-class city status as a cost-effective city?

Mr KIERNAN: I think there is no doubt that we are going to see incremental increases in the price of water. I do not know anything that you can buy for $1 a tonne, let alone the most precious resource in the world. The reason we are here as a species is because of fresh water. But again I make the point that for those of lower socioeconomic order, it would be a very serious thing for them to have to pay more for water on their fragile budgets.

I think industry is going to recognise that water is going to increase in cost and when they do those projections and do their water audit and see if they can avoid taking drinking water, and recycle the water, I think that when they do the projections it might help them make those decisions to bullet-proof them against those price increases in the future.

The Hon. GREG DONNELLY: Clearly, price signals are significant in influencing people's behaviour. Can you tell us if you are aware of the differential pricing arrangements between

commercial and domestic use in terms of models overseas which seem, at least in those communities or cities, to have worked? Are you aware of some examples that we could look at?

Mr KIERNAN: There are three levels: there is payable for drinking, there is the industry's rate and then there is the agricultural rate—and there is a huge disparity there. Perhaps you could help me with that?

Ms KAY: I do not have any on the top of my mind at the moment. I have not done that research, I am sorry.

CHAIR: Perhaps you could take that question on notice and provide more information to the Committee.

Mr KIERNAN: Yes. That is a good area for investigation, definitely.

The Hon. GREG DONNELLY: Related to that is this issue that you correctly raised and which is important about larger families and how they would be able to manage in a regime of higher water prices. Are you aware of any other models where there is differential pricing to households or residential accommodation, which somehow attempts to deal with this issue of the number of occupants?

Mr KIERNAN: No, I am not aware. Are you aware of it?

Ms KAY: No. I was talking with NCOSS about some of these issues and they are certainly looking at those things. I have raised some of these questions with their policy people but I do not have any specific examples.

The Hon. GREG DONNELLY: Obviously, Clean Up Australia has grown from a small event to a nationally huge event. Obviously activating and marshalling interest and effort has been the key to it. Do you think that the model that is being used so successfully—the cleaning up and all the work associated with that program—should be replicated in elevating and activating the consciousness of the public in regard to water? Is it a simple case of using that model and applying it to water conservation and people's attitude to water?

Mr KIERNAN: Yes, definitely. Clean Up Australia Day is one day of the year. It is a flagship event. It is owned by the community. We are apolitical, we are not for profit, non-confrontational in the physical sense and we have only got one agenda: to clean up and fix up. It is owned by the community and it is a great strength and it is a very wholesome model. That is good.

Mr KIERNAN: What those 700,000 volunteers were delivering last Sunday was a message that they care for the environment and they are vibrant and enthusiastic about it, and that is what I want to continue to do. We are doing so much through the year. I spoke of $30 million in water projects we have already done and our ambitious plan is to double that over the next five years. We are concerned with energy, air quality, solid waste and about the results of the consumption of resources. We are in a relatively strong position to be able to take that message of the people forward. We treat the strength we have got with huge respect, and we are very careful how we use the strength of that message, and I guess one of the reasons I am here today is to help deliver their message that they care, and we have got to look after them.

I do not know if you heard me on the ABC this morning when I said it is the fault of the Minoans because they invented the salt-glazed terracotta pipe in 3,000 BC and started piping dirty water out and clean water in. We are still using 5,000-year-old engineering technology in many instances and we have got to get past that.

The Hon. RICK COLLESS: Have you any idea of how much of Sydney's water is lost each year through leaky pipes?

Mr KIERNAN: There is a figure but I do not have it in front of me, but it is substantial.

Ms KAY: Ten per cent is the figure they publish at the moment.

The Hon. RICK COLLESS: If that is correct, 50-60 gigalitres, which is a substantial amount of water?

Mr KIERNAN: Indeed.

The Hon. RICK COLLESS: It is interesting that some of the figures that were given in the Government's submission, such as ground water access in the Southern Highlands, and so on was probably only going to yield about 30 gigalitres and could only do so for a period of three years to allow a seven year recharge, or something like that. It is a lot of money being spent on those sorts of programs for not a lot of water. Even the desalination plant itself at 500 megalitres a days will only produce 182 gigalitres a year, which is still a lot less than what Sydney Water needs. Is the expenditure of a large amount of money on actively seeking to fix up these leaks would be money better spent than on some of those other projects?

Mr KIERNAN: It is about commercial priority, is it not? It is like solid waste, you can achieve anything in the world you want if you spend enough money, but it has got to be feasible. Sydney Water has a system of repair and relining and pipe bursting. It has some very clever things happening there. A lot of the problems are inherited and evolutionary problems. The central business district original cast iron ring main has a projected life of 100 years. Guess what?

The Hon. RICK COLLESS: It is over that now.

Mr KIERNAN: Yes.

The Hon. RICK COLLESS: That is the point I am making. Should there be a large amount of money spent on replacing that infrastructure? Obviously cast iron pipes were good 100 years ago but surely we have a lot better technology now if those mains were to be replaced?

Mr KIERNAN: Certainly. The technologies are there. Sydney Water is deploying them but whether its budget is sufficient, or whether the equation could be improved by an increase in that budget, I do not know the answer to that question but it certainly bears looking at.

The Hon. RICK COLLESS: In your submission you talked about processing the ground water for the Orica plant at Botany Bay. Do we have the technology to process that water and get it into a state where it could be re-used?

Mr KIERNAN: We certainly do have those technologies and we have been looking at that. I chair two Co-operative Research Centres. One is for environmental biotechnology and it has a technology that will clean that as you take it, and recycle it back into there.

The Hon. RICK COLLESS: Is it cost effective?

Mr KIERNAN: We believe so, yes. We are working with Orica on that.

CHAIR: There has been a lot of talk about recycling effectively and the biggest problem is transporting the recycled effluent material back to an area where it is cost effective to be re-used. There have been discussions through release of papers with the AGL existing gas pipe network. Do you have any other strategies or plans in terms of effective transport of what is obviously quite a resource in terms of the recycling systems from the major plants, given that they are all facing out to the ocean at the present time?

Mr KIERNAN: Exactly, and Warragamba is out there so it is an energy factor as well. The trouble is the old-fashioned engineer believed in a transportation system—build big pipes, big pumps and send it everywhere one needs it. I think we have got to be more precinctual now. That is why by looking at the top 200 industrial water users in the Sydney basin they have already got the water there and then, they are sending it back and pumping it back to go to the ocean. Why do they not close the loop and keep it there? That is one example of what is clever, and reduces the reliance on the transportation solution that is not a true solution.

But the transportation and the energy issue are still big areas of difficulty. We have clever people. We have clever scientists and good technologies and there are some very clever things that can be done, and I urge for those to happen. There does not seem to be a great will within Sydney Water to investigate those sorts of things. That is why our re-use is 2 per cent and Adelaide, South Australia is 11 per cent.

CHAIR: What is the aim for Sydney, given its problems?

Mr KIERNAN: Incremental increases and just projected out. If we could double it in five years, and double it again in another five years, we are starting to look more clever.

CHAIR: The potential $1.2 billion cost of the shelved desalination plant—we are looking at other ways to deal with that race between community consultation, education, getting the usage of people down to a sustainable level—what would your priorities be in terms of project infrastructure if you had that funding?

Mr KIERNAN: I dream of it.

CHAIR: Do you have the aqua for mining, the recycling, and what are your ideas in terms of working with the community to actually use that money effectively?

Mr KIERNAN: I think a whole range of clever innovative projects on a project-by-project basis. Our one at White Bay is a fantastic thing: we are going to talk to the Federal Government about whether we can get some money out of that national water deal. There is a huge reservoir right in the guts of Paddington at Centennial Park. There is a 5 megalitre one at Balmain. These are unused assets. Our proposal for Busby's Bore, the old convict second water supply after the Tank Stream became polluted, is to deliver that at Hyde Park and the Royal Botanic Gardens and then go to sewer mining. We will probably raise the money for that. Sydney Water is actually a partner in it as is City of Sydney Council.

It would be wonderful to sit down and cut up $1.2 billion and prioritise where it is spent, and then look at the volumes and the economic benefit: I think that would be a very interesting exercise, and that is what needs to happen. Hopefully, if the Premier sees the wisdom of this clever scientific panel that is one of the things that we could do because we like whatever persuasion of the Government. We like to make it look good by achieving solutions, and that is what we have done with a whole string of governments over the years. We do not want to take it on and go head to head with the Government but we were forced to do that in the desalination debate. However, that is behind us now and hopefully the relationship has improved.

CHAIR: The Committee may call upon you to expand on some of the issues that you raised at this hearing.

Mr KIERNAN: I am sorry I did not have the answers to all questions but it has been a great opportunity for us, and we welcome it.

(The witnesses withdrew)

CHARLES IRWIN ESSERY, Independent Water Consultant, sworn and examined:

CHAIR: In what capacity are you appearing before the Committee—as an individual or as the representative of an organisation?

Professor ESSERY: As an individual.

CHAIR: Are you conversant with the terms of reference for this inquiry?

Professor ESSERY: Yes I am.

CHAIR: If you should consider at any stage that certain evidence you wish to give or documents you wish to tender should be heard or seen only by the Committee, please indicate that fact and the Committee will consider your request. I ask you to make a short statement before the Committee questions you on what you say here and also your written statement.

Professor ESSERY: Given that you have the statement, I will not go over that. If there are any issues you wish to raise with me on that, I am quite willing to answer them and give any further background information. In starting I would like to confirm the one myth that irritates me about this whole process. It is irritating that we are actually here and that we have had a series of debates over the past year because it is about an issue that we should not be concerned about. Sydney is not short of water, fundamentally. If anyone goes away from this or any other meeting associated with this believing that we are short of water then there is something wrong with what is happening between us in terms of communication.

What we are short of is good management. I have been involved in the academic side of Sydney's water. I worked for Sydney Water. I worked for government and regulated Sydney Water. The only thing I have learnt in the 15 years I have been in this country is that the quality and effectiveness of management of water resources in Sydney—and to a certain extent this is probably applicable to the rest of New South Wales, as there are people outside Sydney who drink water—has declined incredibly. Since this is a forum of politicians, I would ask politicians to remember that water is a basic service and should not be politicised. Everyone of us needs water and it should not become a football to be used and kicked around. It is too fundamentally important for the values and lifestyle of people who live in Sydney and Australia.

What is missing in this whole process is an abundance of spin and a lack of actual factual information, and a lack of access to the public who pay for the services of Sydney Water and the bureaucrats involved in regulating water, and we cannot get access to the information. If you try to get access to information the door is closed, and it is not something that needs to be closed. This is an open service that should have free access to the information to allow the community to make proper decisions and also provide it with the appropriate direction to our politicians as to whether or not we are willing, for instance, to drink our own sewage, as certain people have actually said here. The community is not being consulted and that is being confounded by a lack of access to information.

We need to have some form of independence brought back into the water debate and we have to stop micro-management by politicians and people who do not know what they are talking about, not necessarily the politicians but those who are advising them. If you are looking at a future for Sydney it is a heavily centralised, probably the most centralised water authority in Australia and one of the most centralised in the world. That is the reason why we are having problems. We have to look at a new way of managing water and also stop this single centralised approach to it and have a decentralised approach to the supply and delivery of services of both water and sewerage to the communities that currently one single monopoly is in charge of.

In terms of producing some form of independence, I strongly recommend either some form of joint party or an independent office such as the Auditor General, who is one of the only bureaucrats in New South Wales who has been willing to point out any of the flaws in the so-called water metro plan. We need water to be regulated properly and effectively for a long-term future, which must be in a timeframe of 30 to 50 years, not one to two years, which is the currently planning timeframe. I also suggest that if you recommend anything in terms of future studies you look for independence. I am an

independent consultant, therefore it is not me pitching for work. I am quite happy doing the work I do at the moment.

I am probably not enjoying myself as much in terms of anything in Australia since I actually became independent because it allows me to think about things and speak openly without fear of contradiction or pressure being put on me. We need to have some independence in there and you need to get expert advice, not just from Australia but from people overseas. We do not have all the answers. I reiterate what Ian Kiernan said: please get an independent group of people but not a set of hacks, the same usual suspects who are producing the same usual facts and spin for their organisation that is currently in charge of the metro plan.

Finally, I ask you to get those people to come up with proper costings. Which one of you has the costings for a desalination plant? Which one of you has been told how expensive it is to put in a dual reticulation system? No-one has done it. No-one has costed it. People are telling you a load of spin. No-one is telling you how much it actually costs and what the true benefits are of having rainfall tanks. Nor are they telling you all the regulatory requirements that need to be done to ensure that it is a safe and reliable supply. You are not being given access to full information because the information that is needed to answer the questions you are asking has not been analysed yet. So if you put forward a panel, do not make it a talkfest. Make it a panel of people who can give you proper answers that will give you information to allow someone to make decisions based on facts, not on spin and rhetoric.

If you all can remember, back in 1995 Sydney Water invested many hundreds of millions of dollars in a series of investigations called the Clean Waterways program. You could probably fill one whole deck of this library with the reports that were produced from that, and they are buried in the depths of Sydney Water. Some of them were available in the library. One figure that came out from that particular exercise was the cost of fixing Sydney's water problems for the future and it was as high as $20 billion. There is your bottom line. In 30 to 50 years time you will have to spend at least $20 billion, estimated back in 1995, to get a secure and effective water and sewage service for Sydney. So fiddling around with $1.2 billion here on a desalination plant or a few billion dollars on a few other bits and pieces is the wrong thing.

Find out what you want. Get the people of Sydney to tell you how much they are willing to pay for what they have said they want and then go ahead with it. Do what Adelaide, Melbourne and Perth did. They had an open process by which they explained and could justify the information that was being given to people. That is probably the most important thing you have to think of. There is no shortage of water. There is plenty of water but it will cost money.

The Hon. PATRICIA FORSYTHE: Dr Essery, you have just said that one report on the Clean Waterways program estimated that it would cost $20 billion to fix Sydney's water problems. Can you break down that $20 million?

Professor ESSERY: I have not actually seen a breakdown. That report was never made public inside Sydney Water, but that was the top figure. But I could surmise that it would be for the replacement of the current infrastructure. People talk about dual reticulation being very expensive. Not many people realise it, but about 20 towns in country New South Wales have had dual reticulation for nearly 50 years. It was not too expensive for them. With dual reticulation, you are talking about one extra pipe of a smaller capacity than the pipe put in originally. Instead of having one large pipe carrying the water, you have two smaller pipes. But you should bear in mind that most of our infrastructure is failing. There has been no independent review to establish what the leakage figures for Sydney are, but about three or four years ago it went from 17 or 18 per cent to 11 per cent overnight. Why? Because they actually calibrated the meters for the first time in 20 years. So the information we have been getting is not reliable.

What we have to do is go back and think how much it will cost to replace our existing 100-year-old infrastructure. When doing that, take into account that you might put in a dual reticulation system and be working with the private sector and/or working with the public sector. I am not a great fan of one or the other, but you can have a good private sector relationship provided the public sector knows what it is doing, and that is what is lacking at the moment.

CHAIR: Earlier there was mention of the old cast iron Sydney network being way past its use-by date. Is this now an opportunity for providing dual reticulation within the Sydney central business district?

Professor ESSERY: I think it is, yes. I know of four reports that the Government has commissioned but which it will not release. You may have seen those through upper House inquiry documents. Those four reports on recycling in Sydney were delivered to the Minister in June last year. They have not been released, they have not been made public, and I would love to know why. One was supposed to be an economic analysis, and the other three were meant to be targeted specifically towards the north, west and south. Why are these top-secret documents? That information should be available publicly.

The Hon. PATRICIA FORSYTHE: How much do you believe Sydneysiders should be prepared to pay for potable water?

Professor ESSERY: To be honest, I think that is the wrong question to ask. I would explain to people what is needed to get a secure supply, and then explain to them what the options are and how much each of those options will cost. We know that Sydney pays about a third of what is paid by other first-world countries, the likes of Europe. Three dollars a kilolitre is horrendous. I must admit to being very surprised when people say, "What about the poorer families that cannot afford that?" That is absolute bunkum. There are community service obligations in the Sydney Water operating licence that have to be dealt with, and there are similar community service obligations on every local government authority that runs a water authority in country New South Wales, and those are used for that very purpose. So, to use that as a scaremongering tactic is nonsense. If you tripled the price of water in Sydney, it would still mean that people would pay about half to a third of what they pay for their mobile phones. What is more important, your mobile phone or your water service and your sewerage services? The answer to your question is that it could be anything between $2 and $3. We have not sat down and worked it out yet, but that is the top end of it.

CHAIR: How much of a problem is there in assessing that and being fair about who pays for water in the non-metered units in say the older parts of Sydney? Would such a campaign be effective if we had more metering?

Professor ESSERY: To have blocks of units—with 50 to 100 different dwellings and maybe 300 or 400 people in them—that do not have individual meters, is nonsense.

CHAIR: Is it cost effective to convert those to metering?

Professor ESSERY: Of course. Think of it this way: If you are running a business, why would you not have cash registers checking all the flows of money in and out of your system? If so, why not do the same for water? Why should someone living in a block of flats have to pay a flat rate when their water use could be metered properly? The cost of a typical apartment meter, which is much smaller than the ones that we have in Sydney, is about $50.

The Hon. HENRY TSANG: It is the reading of those meters that costs money.

Professor ESSERY: Their reading can be done by someone who does the readings for electricity and for gas. If we have individual electricity meters, why could we not regulate the process to have gas, electricity and water all read by the same person?

CHAIR: Is Sydney Water getting a windfall from fixed rates?

Professor ESSERY: I would not say so, no. I would say it is just too hard for Sydney Water. I believe they have done a study on this, and again that has just been dumped.

The Hon. RICK COLLESS: Dr Essery, I am very interested in the figures you mentioned in the article in the *Sydney Morning Herald* regarding the amount of water that can be collected by other means. You mentioned that 500 gigalitres of water could be collected from stormwater. That is an extraordinary amount of water, given that Sydney's usage is somewhere round that 500 to 600 gigalitres a year.

Professor ESSERY: You have got to remember most of the rain falls on the eastern side of Sydney. It is actually 1,200 millimetres a year, which is about 50 per cent more than the rainfall in the catchment. Our cities are perfect collectors of water, whereas our catchments are imperfect collectors. If you came from another planet you would wonder why we are collecting our water from the catchments and not from surfaced areas that we have created. Equally, when most people think about stormwater, they think about floods and drainage issues. Well, if you harvest that water and put in appropriate retention tanks—not massive tanks, but appropriate retention tanks—across the whole of the city, under parks, under playing fields, under cricket grounds, under larger buildings, you rid yourself of the flooding problem as well. That figure is not taken into the costings of any of these things, and that is why I think you need a properly analysed set of information on how much all of these options actually cost. If someone in government has them, I would like to see them.

The Hon. RICK COLLESS: When you were working out those figures, what sort of coefficient of runoff were you using for urban areas?

Professor ESSERY: For that one, the coefficient that is normally used for all the modelling work in Sydney, because I did most of that for Sydney. It varied between 75 and 95 per cent. The figure that is used there is fairly conservative.

The Hon. RICK COLLESS: You spoke about the forested type catchment. What sort of coefficient runoff did you get for those areas?

Professor ESSERY: Typically, for somewhere like Sydney's catchment area—which is a mixture of forest and farm land—you are probably getting around 30 to 35 per cent. In some areas it is as little as 10 or 15 per cent.

The Hon. RICK COLLESS: So, off an area that has a lower rainfall and a lower coefficient for runoff, you get a lot less water than you do from paved surfaces in the city?

Professor ESSERY: That is correct.

The Hon. PATRICIA FORSYTHE: This may be a very stupid question, because I am an absolute amateur in this area, but I will ask it anyway. In the late eighties Sydney had two 1-in-100 year rain episodes, and at that point Warragamba was at capacity, as I recall. If we capture all of this water from the hard surfaces by using a different process, what will be the consequence at a time when the dam is full and water pipes are full?

Professor ESSERY: At the moment, we have the situation that both the Hawkesbury River and the Shoalhaven River are starved of natural flows, so that whenever the dam releases you are probably doing something that is very healthy for the Hawkesbury and Nepean rivers, and you certainly would be doing something very healthy for the Shoalhaven River. I personally have a concern about the lack of flows coming down, because we need flood flows coming down the Hawkesbury. I live in Brooklyn, which I suppose is the last point on the river, where the oyster farms used to be. In February last year the oyster farms were closed down because of the QX virus. That is a parasite that lives in the oysters; it is not something that was introduced to those oysters. It is in every oyster in Australia, but particularly rock oysters. I would suggest that most biologists are looking at a cause based on some pathological thing that is killing off these oysters. I would suggest it is the lack of flows coming down that river. I am told that the people in the Shoalhaven are now having some problems with their oysters, which are becoming more stressed. So it is very important that we have those flood flows coming down. The reason that the Hawkesbury is there is the several centuries of large flood flows of that sort coming down, and at the moment it is actually starved of those. So it is probably having a range of different impacts that we have not even bothered to detect yet.

The Hon. RICK COLLESS: What the Hon. Patricia Forsythe was referring to was what do you do with that excess water that you collect from the stormwater system when all the reservoirs and rivers are flooding?

Professor ESSERY: You utilise the existing stormwater system you have to get rid of your excess, but your 100-year flood in an urban area that has had a lot of retention in it will be much less than a 100-year flood that you would have which has a lot of storage in it.

CHAIR: In other words, we would be reverting once in 100 years to the madness of what is happening on a regular basis currently?

Professor ESSERY: Yes. In reality, I am a very simple surveyor of water balances, that is why I got involved in water. But we do not have a balanced system. We have a very unbalanced system and that is why we have problems in flooding and lack of water supply and lack of flows in our rivers.

CHAIR: There has been quite a bit of talk about changing weather patterns. We are getting more rainfall over the city itself and less in the catchments. Your strategy would fit into changing weather patterns?

Professor ESSERY: If I were a businessperson or a philanthropist with lots of money, I would invest in and set up something called a metropolitan water catchment in competition with the Sydney Catchment Authority. I reckon you have a much better business set up in the city where you would collect and install water and treat it and return it. It would be more cost-effective in the long term to do that if the Sydney Catchment Authority had to pay for the impact it is having on other users for its extraction.

CHAIR: In terms of catchment change and in terms of efficiencies you have discussed here, what is the hold-up? What is the problem with Sydney Water? Is it a cultural thing?

Professor ESSERY: Very much.

CHAIR: Is it the fact that they maintain centralised authority at all cost? Could you clarify for the Committee why we are seeing these massive blocks towards what we would consider to be an intelligent strategy, a multifaceted strategy?

Professor ESSERY: I am probably being very critical of Sydney Water and a lot of very good people work at Sydney Water. But there are no people in Sydney Water at the top with the vision or ability to think outside the short-term—one to two weeks sometimes—episodes and certainly outside the annual budget. That is a disgrace for an organisation that had a good history of building a very effective water supply and sewerage service for a city of the last century.

Now we need to move on from that. We are at the threshold where demand has been exceeding supply since about 1980 and particularly for the past 10 years there has been no effective, proper planning for Sydney. It has all been done on spin. There are 20 people called corporate stakeholder managers on one floor at Sydney Water. You were asking about efficiencies in the private sector. Someone who left Sydney Water told me less than a year ago that an internal report states—and I cannot confirm this because I have never seen it, but you might ask Sydney Water to confirm this—overhead costs for Sydney Water are 49 per cent. I looked after the water utilities outside Sydney and we reviewed their performance every year, all 130 of them, and only one exceeded 35 per cent, and that was a basket case one at Broken Hill. Good water authority should be running at around 15 per cent to 20 per cent.

How do you explain that we have no plans for the future? We are in a situation of crisis. We have spin coming out every orifice of that building and they have 49 per cent overheads. It is very much the culture of the organisation, not the individual, but the culture and leadership at the board and executive level and the management level. They are just not on the ball.

CHAIR: How much of this came from the original 1980s ocean outfall direction and how much of that legacy is making it almost impossible for Sydney Water to turn around at this stage?

Professor ESSERY: When I joined Sydney Water back in 1992 I was warned it was a series of little clubs of various factions, shall we say. I would be very careful of some of the things I would say because it might offend certain people. It took me several years to figure out who those factions

were but they are still there. It is still an organisation that gives people gold watches after 30 years. I am talking about people who are 50 coming up and showing me their gold watch. That is within the past year.

The Hon. HENRY TSANG: Gold plated.

Professor ESSERY: No, gold—$5,000 or $6,000 watches, I am told.

The Hon. HENRY TSANG: Where is yours?

Professor ESSERY: I only stayed in Sydney Water seven years. That is the longest in any organisation in my life.

Ms SYLVIA HALE: Do you have a view on what process or method should be used to determine the areas where public funds would be best invested?

Professor ESSERY: In terms of new infrastructure?

Ms SYLVIA HALE: Just as a general approach to the problem. What sort of priorities would you establish and where would the money go?

Professor ESSERY: I would be focusing very much on the leakage side of things and making sure you are getting the right information. I would be focusing on the sewage treatment site. In Sydney Water the real issue is, like stormwater, effluent is there to be got rid of as quickly as possible. The system is set up to do so. Therefore I would be wanting to spend more time focusing on how we should utilise the existing infrastructure to upgrade for recycling.

Ms SYLVIA HALE: If you were doing that, what would be your first step?

Professor ESSERY: I would say the three treatment plants, Liverpool, Glenfield and West Camden, that group that is clustered just in the south-west. I would take the group in the north-west and I would ensure that they were basically upgraded to high-quality effluent recycling plants. We have Liverpool at the moment which is basically treating water to a certain standard and then shipping it down to Malabar for discharge. That is an incredible waste, particularly when you have a growth area and a plan for the south-west and the north-west sectors.

CHAIR: So we have the opportunity there to process and reuse at Liverpool and enough industries to receive that and do away with transporting it to the coast?

Professor ESSERY: That is right. Not only that, you have sitting there since 2003 a report called the Hawkesbury-Nepean Form Report which has been left on the shelf. It is requiring up to 100 gigalitres of environmental flows. Why on earth are you pumping water all the way from Liverpool to Malabar when you should be returning it to the river at a treated level where it could be providing environmental flows and stopping you from having to release the water in Warragamba Dam.

Ms SYLVIA HALE: You are saying it would have to be treated to a high level?

Professor ESSERY: Yes.

Ms SYLVIA HALE: Would that be expensive?

Professor ESSERY: Put it this way, if you were developing a dam in any area of New South Wales, if it was discharging into a river you would not be allowed to build those plants. They are not a high enough standard. Sydney has ocean outfalls. The last people who tried to put an ocean outfall in New South Wales was up in Coffs Harbour in 1995. You might have even been there.

CHAIR: I was there.

Professor ESSERY: Why does Sydney discharge primary treated effluent when you cannot do that into the oceans at any other time and why do other towns in country New South Wales have to go to tertiary treatment?

The Hon. RICK COLLESS: You cannot even discharge out of your boat if you are out on the ocean.

Professor ESSERY: That is right. And why do we have to wait until 2015 before the climatologists in the CSIRO can tell us whether or not there is going to be climate change so we can then decide what the environmental flows will be from the Hawkesbury-Nepean river.

The Hon. HENRY TSANG: This Parliament should be working to resolve the problem. One way is to work with local government?

Professor ESSERY: Yes.

The Hon. HENRY TSANG: I understand that most developments from medium or even smaller size are required to build a retention tank for stormwater?

Professor ESSERY: Yes.

The Hon. HENRY TSANG: And that is only in case there is a flood?

Professor ESSERY: That is right.

The Hon. HENRY TSANG: So it would be quite easy to have that retention tank collecting stormwater and use it as clean water?

Professor ESSERY: Yes. If we are clever about it, you have to remember that half the runoff that is generated to go into your stormwater runoff is coming from your roof. So, instead of having one big tank for stormwater and another tank for rainwater, you have your two medium tanks and you keep the cleaner stuff that comes off your roof for certain purposes and then use the other stuff in the stormwater tank requiring no treatment for your irrigation outside. If we think about using the water properly we can tailor a solution to almost any size, be it an individual house block or a development of 10,000 houses.

The Hon. HENRY TSANG: There could be a case where a solution could be found, having a State institution working with local government?

Professor ESSERY: Yes. I think local government is very important in resolving this issue. Government departments spend more time fighting among themselves. The only thing that State government departments agree more on than fighting among themselves is about fighting local government. That in itself makes it an absolute shemozzle for the average person in the street to try to deal with these people and to be innovative. Local government has to be involved in it. We have to look at the outcomes that are required and forget some of the turf protection that is so much part of New South Wales culture.

The Hon. GREG DONNELLY: The case you are advancing today talked about a holistic approach to water. Looking at large metropolises in Australia and internationally, and in that order, and their holistic approach to water would you like to nominate the ones that you think do it quite well?

Professor ESSERY: There are no large metropolises in the world, at this moment in time, doing an integrated water cycle approach or a sustainable approach. To be honest, most first world countries have been exploiting the resources they have access to at the moment. In the case of Sydney, we have actually gone down the pathway of getting to the point where our supply is exceeding demand. Many European cities actually went past that 100 years ago. Basically they consume much less water, they have no control over where the water comes from and they recycle their water. Each river basically is a series of sewage treatment plans with a water drinking plant downstream. Their approach has not been so much having to harvest rainfall and harvest stormwater as having to

continually increase the level of treatment so that people downstream can penetrate the water and take it out again. They have been recycling, but in a different way, because of the nature of the trend. In Australia we have the option, if we wanted to, to do that: Just do indirect potable. Forget stormwater. Put the effluent back into Warragamba Dam.

I have to reiterate, the worst piece of spin is this "yuk" factor that is generated. In 1995 Sydney Water did its own internal report at the end of the Clean Waterways Program, which showed that most people realise that indirect potable was, while unpalatable, inevitable. While we only hear from Mr Sartor of the 2003 review he had done, he does not realise that a document in the Sydney Water library shows 10 years of previous reports, which showed that the only reason people are against recycled water is post the crypto crisis. Given the mismanagement that occurred during that whole process, no wonder people are that way inclined. We could forget stormwater, we could forget rainwater, we could forget groundwater and just do indirect potable because the water that would come out of a treatment plant that would take the effluent from Malabar and put it back into Warragamba Dam, that water would be cleaner and safer than the water that is currently sitting in or entering Warragamba Dam. You actually would be cleaning the dam up by putting that effluent back in there. There is a cultural episode that is required.

The Hon. HENRY TSANG: The transportation and energy costs would be quite high.

Professor ESSERY: I am only using that as an example because that is one of the examples that certain people are actually proposing. I actually would prefer not to do that. I actually would prefer to be more decentralised so that you could reduce your transport costs. I will give you an example. Recently a developer asked me to have a look at an area where he has a shortage of water. He cannot get access to water. He can actually produce a site with 10,000 houses that will have only 25 per cent of the water consumption of potable supply, and that will allow him to build it. They can recycle, not with one treatment plant but with four small treatment plants. The reason for that being that it is actually on a hill slope. Why would you want all the water drained out of the bottom of it? Treat it and pump it back up again whenever you could actually disperse it with modern technology into small blocks that are no bigger than a substation.

CHAIR: You are saying that could happen on a catchment basis?

Professor ESSERY: That is right. If you give an engineer a scope and actually tell him to sit down and give you the answer to it, he will do it, and he will work with an economist to actually come up with a price. Oddly enough, that same development did not actually cost more to supply that development than it would with the traditional approach of pumping all the effluent out to a neighbouring town, treating it and discharging it into the river.

The Hon. HENRY TSANG: You are saying we have the technology. If someone builds a block of 200 units it is quite economically feasible to build a small treatment plant to recycle the grey water?

Professor ESSERY: Yes, and that happens in many Asian countries because you actually find at the bottom of some of the two or three stories, down into the underground areas of those skyscrapers there are small treatment plants basically the size of containers. They actually are called package treatment plants. You can keep on adding them. It really does not come down to the technology or the lack of water; it comes down to the willingness to actually address the myth that are out there that have been used to try to misinform the community.

The Hon. GREG DONNELLY: In relation to rainwater tanks, your article says that, "we could economically meet more than half our water needs in rainwater tanks". Collecting is one thing, but the management of that water that is collected by the household, how is that done effectively?

Professor ESSERY: Again, that is what is totally lacking. In my former career with the Government I actually had to chair a thing called the Committee for Uniformity of Plumbing and Drainage. The great bane of my life was the fact that even though I was trying to promote more sustainable use of water, people thought that I was the bureaucrat blocking them from putting in rainwater tanks. That was not actually the case. There are difficulties associated with rainwater, and it is not the panacea. In fact, I was discussing with someone in Canberra, a former colleague, the very

same issue yesterday afternoon. What is totally lacking in all this is the fact that when you have a rainwater tank you have to put in an appropriate rainwater regime. That is the sort of thing that people would not understand. People may have to spend $200 or $300 a year in getting a plumber to come in and have a look at it and check it, in the same way that someone who lives in a country area has to pay $300 to $400 for someone to attend their septic tank. These things have to be incorporated into the regulatory process that we have. This is not about deregulating and allowing people to what they want to do.

If we got to the point where there is no regulation—and the current regulations are quite dangerous in my opinion—if we do not have a proper regulatory environment we will end up having, in 20 years time, a whole series of hodgepodge connections left right and centre. That is why we have to integrate this thing, and we have to make as a community decision, into our way of doing business. We currently have regulations in New South Wales that allows you to directly put your rainwater tank straight into the potable supply. That is nonsense! I refused to sign that particular document, but a certain person wanted it done. This is the mismanagement of some people who get involved at micro management of the water utilities and the regulatory environment that are exposing is to dangers. You should not be able to put an unfiltered water supply into a perfectly plain, perfectly acceptable Sydney Water supply if it is inside the house. That is madness! But that was done for political and appropriate influence, shall we say, to appease people who wanted rainwater tanks. Just because someone says they want a rainwater tank does not mean that it is a panacea. I have one, but I would not drink out of it because I have the possums in my roof. But I use it for lots of other things. If I wanted to drink out of it I would put a filter on it.

The Hon. PATRICIA FORSYTHE: As members of Parliament we get lots of correspondence. Frequently I get an email from an organisation that is promoting just what you said about linking up or freeing up some of the regulations. They compare New South Wales to the other States and suggest that in some other States it is easy. Is that so?

Professor ESSERY: No. We now have a problem, I would say, the most dangerous situation where someone can walk into a house not knowing that the water supply in that house is untreated. If you have a kidney problem, if you have an immune deficiency problem and you are exposed to that, what sort of risk is that putting householder to? Because that very same interference refused to have a sign, there has to be a warning on the drinking water taps in this house that says that someone has connected the potable supply with a rainwater tank. We do not allow that in the rest of Australia.

The Hon. RICK COLLESS: But what about people who live in rural areas that have only rainwater tanks? I have lived on a rainwater tank or my life.

Professor ESSERY: That is right. It is perfectly fine. I am not saying there is anything wrong with drinking rainwater tank water. I am just saying that if you go to a farm and you know it is a rainwater tank and if you have a problem with certain issues in water you will deal with that, but if you go into a house in Sydney that has a potable supply attached to it and there is a water meter outside it is probably fair to assume under law that you actually are drinking Sydney water that has been chlorinated and treated. It is not about stopping people doing it; it is not about saying it is unhealthy; it is about making sure that you actually manage the process effectively.

The Hon. HENRY TSANG: If you boil the water—

Professor ESSERY: Or filter it.

CHAIR: That could be subsidised by the government authorities to solve the problem.

Professor ESSERY: I would suggest that subsidising the filtering water if you want to drink it is a personal thing. There are plenty of other uses for rainwater other than drinking it. Some people do like it. I must admit that I quite like it, but I would filter it.

CHAIR: You are against water restrictions generally. I will not make accusations. This morning Ian Kiernan was very keen on what might be a sort of community compact involving people in the issue. From his point of view broad there is broad educational advantage in involving the

community, watch dogging on certain things—the wealthy will just use the water anyway if you do not have restrictions.

Professor ESSERY: I find that extreme. The wealthier use the water but it is the poor people who seem to use a lot of water that we are concerned about. There are a lot of contradictions. I think at the end it is a bit of a nonsense. If Sydney does not have a shortage of water and you manage it appropriately and you charge appropriately why do you need restrictions? Restrictions are there to assist in periods of drought. One of the things that people will not tell you about is that Sydney may have actually done very well to reduce its consumption by about 20 per cent, but most towns rely on drought restrictions to allow them to extend the capacity of their systems. So when you are in drought and you are already on permanent restrictions what are you going to do? You have already used up your community savings. So it is a bit of a nonsense that side of it. Equally so, if people are—

CHAIR: On the other hand, if you are coming into drought and you have had restrictions then you have that buffer of your dams being at a far higher level because of the previous frugal use.

Professor ESSERY: But restrictions can only last for about a year or a year and a half and then you get a thing called demand hardening. You will find that Sydney's water consumption is probably increasing now. I have not looked at the figures but I would predict that Sydney water consumption is probably now at least 30 or 40 gigalitres higher than it was at the peak of the effectiveness of the restrictions. It is a common human behaviour. People get fed up. I do not grow roses—I hate gardening—but if someone has spent 30 years producing roses why should they not be allowed to water the garden? If someone is mad on washing the car why should he not be allowed to use a trigger hose to wash the car? It is about the freedom of being allowed to do what you want to do provided you are paying for the consequence of it. If we had recycled water and we used stormwater and rainwater we would have no need for restrictions.

CHAIR: You talked about closed databases. In your report you were critical of the lack of opportunity to gain information. You suggest there are rooms full of material in storage that are not available. What mechanism would be most appropriate to set up a structure whereby not only is information available but there would be a task force? Is it the Auditor-General that is able, without fear or favour, to get the information so that we have proper transparency?

Professor ESSERY: There needs to be an independent body. The only person who seems to be independent in New South Wales is the Auditor-General. IPART is not independent; it has interference from Treasury. Certainly government departments are not independent; they do what they are told. We need to have a body that is depoliticised and looking at the long-term future. It has to be a section of the Auditor-General's office because that is the only office that has the powers under our legislation to be open. If someone rings up they should not be told, "We cannot give that information out. It is a security risk." I rang to ask about the capacity of a pumping station because I was asked to write an article. Even though I had employed these people and they worked for me I was told that it was a security issue as to whether or not they could tell me the capacity. I used to have the report in my desk. I went into the Sydney Water library and found it afterwards. But that sort of paranoia is just unhealthy. Information such as that is not the sort of thing that should be seen as top secret.

(The witness withdrew)

SAMUEL EDWARD LAURENCE BYRNE, Executive Member, Local Government Association of New South Wales, 28 Margaret Street, Sydney, affirmed and examined:

KENNETH JAMES McDONELL, Executive Member, Local Government and Shires Associations of New South Wales, 28 Margaret Street, Sydney, and

RYAN FLETCHER, Director, Policy and Research, Local Government and Shires Associations of New South Wales, 28 Margaret Street, Sydney, sworn and examined:

CHAIR: In what capacity do you appear?

Mr BYRNE: I am here to represent the Local Government Association of New South Wales and also Marrickville Council.

Mr McDONELL: I am retired but I am an elected councillor on Sutherland Shire Council. In local government we are taught that we have to declare interests. I think I should declare to the Committee that although I am retired I spent 41 years in the employment of the Metropolitan Water, Sewerage and Drainage Board and Sydney Water. I spent about 18 years of that time as a president and official of the union and for 10 years I was also a member of the board of Sydney Water, elected to that position by the employees. I appear today as an executive member of the Local Government and Shires Associations.

Mr FLETCHER: I represent the associations.

CHAIR: Are you conversant with the terms of reference of this inquiry?

Mr BYRNE: Yes.

Mr McDONELL: Yes.

Mr FLETCHER: Yes.

CHAIR: If you should consider at any stage that certain evidence you wish to give or document you may wish to tender should be heard or seen only by the Committee, please indicate that fact and the Committee will consider your request. Before we proceed with questions from the Committee, if any or all of you would like to make a statement prior to the questioning, please feel free to go ahead.

Mr McDONELL: Mr Chairman, I offer an apology from the president of our association, Councillor McCaffery, for not being able to be here this morning. She has asked Councillor Byrne and me to represent her. I will begin by thanking the Committee for the opportunity to attend today's hearing. We commend the Committee for the task it has undertaken and look forward to the outcome. As you would be aware, the Local Government Association of New South Wales [LGA], along with the Shires Association, is the peak local government organisation in this State. We are pleased today to be able to provide you with some insight into Local Government Association views on this important matter.

Since our submission to this inquiry, the New South Wales Government has announced a number of changes its plans to secure a water supply for Sydney. This includes deferring of construction of the proposed Kurnell desalination plant until dam storage levels drop to 30 per cent and the potential use of ground water reserves in areas of the upper Nepean and Western Sydney, if dam levels drought to 40 per cent.

The key concerns that have been raised by the LGA in relation securing of Sydney's water supply have been largely related to process and accountability. I would like to highlight a few of the key points we have made relating to the terms of this inquiry. The LGA supports a range of options to achieve a sustainable water supply for Sydney. We recognise that there is no single best solution. However, like many of our member councils, one of our key concerns had been the lack of analysis of

the options for securing Sydney's water supply. There needs to be an adequate analysis of alternatives of Sydney's water supply to ensure they are the most socially, economically and environmentally responsible activities to pursue.

I will not rehash our written comments on the environmental impacts or the environmental process associated with the Kurnell desalination plant, although I would say that the calls for more detailed assessment of the desalination plant remain valid as long as the plan has the potential to go ahead. This also highlights the concerns raised over the State Government's consultation process relating to the Sydney water supply. We have seen the progress report for the State Government's Metropolitan Water Plan and I understand the final plan will be released soon. I would hope that the State Government takes this opportunity to consult on the options within the plan before its release, and preferably waits to consider the outcomes of this inquiry before releasing the updated 2006 Metropolitan Water Plan.

Important decisions that could significantly affect a local community, including major infrastructure projects, must be supported by a sound and transparent process, not simply imposed. There need to be meaningful consultation on the options for Sydney's water supply and this is most apparent for the options that have significant implications for the councils and their communities, such as the use of ground water reserves and planned regulatory reforms related to water recycling.

A sustainable water supply for Sydney requires the engagement of the whole community. We encourage the New South Wales Government to take this on board and engage local government and the general community in meaningful consultation before it commences with major projects relating to Sydney's water supply. Finally, Mr Chairman, the Local Government Association is opposed to the privatisation of ownership and operation of the water supplies in New South Wales. Thank you for listening. We will be happy to take any questions from the Committee to expand on these matters.

CHAIR: Do any other councillors wish to add to that, or make a statement prior to questioning? If so, please feel free.

Mr BYRNE: If now is the time for statements? I do not want to muddy the waters too much because we have some differences.

CHAIR: If you have a statement, now is the time.

Mr BYRNE: I will put on my Marrickville Council hat on. We have slight, or some, differences from the Local Government Association.

The Hon. RICK COLLESS: I am just wondering whether Councillor Byrne is here representing the Local Government Association or Marrickville Council.

Mr BYRNE: Both, on my understanding. We were contacted this week and asked to come. I know that does not say that on the paper but my understanding is I have got two hats.

CHAIR: You have said both. If you would like to make a statement now, please feel free.

Mr BYRNE: Sure. The Marrickville Council took a clear position of opposition to the desalination plant. That was the unanimous position of the council, which is made up of a broad range of political outlooks. In the limited time that we had, we certainly had the clear impression that our community opposed the idea as well. Sydney Water did the consultation and there was strong opposition from the community there. Apart from those broader concerns, Marrickville's specific issues were, because the pipes were planned to come through our area, that we had no real details on the routes, no real details on how the pipes were going to be made or timing. We just had very little information. In the process this was the only consultation, or this was the only time, we were going to be able to provide input on the routes and we did not even know what the routes were. From our area people were saying, "What is this? We do not even know what this is. We cannot comment on it." So I guess I just add that perspective from the local area.

CHAIR: We have had some interesting input, particularly from Mr Kiernan, ranging from looking at alternative water storages throughout Sydney to really having quite an impact on Sydney's

capacity to capture storm water and re-use it before it escapes through the sewerage system. From the local government perspective, how do you see those opportunities? Do they exist? Is there infrastructure in individual municipalities to create the opportunity that he was describing?

Mr McDONELL: Mr Chairman, I am not aware of any existing infrastructure in the Sydney metropolitan area over and above what exists in terms of the water and sewerage system. I have heard, though, the points that have been made about the AGL pipelines, but I do not know anything about it. There is a question in my mind about where those pipelines are and how feasible are they to be effective. I take it they were going to be used in relation to water for industry and not for potable water.

CHAIR: No. We are talking about industrial use, primarily, and also watering of municipal parks and gardens and such like, but alternative uses.

Mr McDONELL: Yes. I do not know if it is the time for me to comment, but I do have some concerns about a suggestion I heard that there was a proposal to build a sewage treatment plant within the confines of Sydney Airport on Commonwealth land. If that was the case, does that mean that that will fall within the legislative protection, if you like, of that Commonwealth land, and not be open to public scrutiny or scrutiny by local government? I would certainly be opposed to that. I am aware that in that vicinity we have got Sydney's ocean outfall, which is a major Sydney sewer trunk line. I suppose it would be the ideal position to locate it there, but I would be concerned that it might be put there in a way that it would not be open to scrutiny by local government.

Mr BYRNE: With my Marrickville hat on, just north-west of Sydenham station, Sydney Water has a quite substantial reservoir in our area. The council has had some discussions with Sydney Water as to how we could use this resource and we have not got very far. This area used to be a swamp and it is now a concrete reservoir, and it is massive.

CHAIR: Do you know the capacity of that site?

Mr BYRNE: No, I do not have it with me, but it is significant.

CHAIR: Perhaps you could provide the information about the capacity to the committee.

Mr BYRNE: Sure. If we could reuse that water for the parks and gardens that we are struggling to maintain and in the industrial area that would be fantastic. It is those sorts of local reuse initiatives that are cost effective. We would not have to transport water a long distance. A lot of the solutions we need in this area are locally based. That reservoir sits in an industrial area. A lot of businesses to need water to operate around there. That sort of thing could be cheap when it is used for a good purpose.

Mr McDONELL: There is another issue in relation to Sutherland shire and that is the ocean outfall. I think people are generally aware that the ocean outfall at Cronulla is tertiary treated effluent. I know that there have been some discussions with the Government about the reuse of that effluent, either locally in industrial areas or even on playing fields.

We have had some concerns about discharge of radioactive material to the sewer from Lucas Heights, which comes via that ocean outfall. We have had a response to that query from the Australian Nuclear Science and Technology Organisation [ANSTO], which says that it is quite safe. Our council has indicated that we would like it to stop discharging the radioactive material into the sewer. I do not want to digress into nuclear matters, but I think it is relevant. We had a local committee dealing with nuclear waste. ANSTO indicated that it could recycle that material. Of course, if it did that we would make the use of it. That would make the effluent at Cronulla more acceptable to the community for watering playing fields and so on. It is much safer.

CHAIR: So, the actual tertiary process would not impact on resolving any radioactive material in the system?

Mr BYRNE: The argument put forward by ANSTO is that it treats it before it is discharged into the sewer. By the time it gets to the ocean outfall it is diluted. They compare it with drinking

water. I have some trouble getting my head around that. They say that by the time it gets there and it goes through the tertiary-level treatment that it is satisfactory. From a safeguard point of view, our council would prefer them not to do it.

CHAIR: For the purposes of this inquiry, who would be the final arbiter on safety or otherwise of that material for reuse?

Mr BYRNE: The material from ANSTO?

CHAIR: The fact that you have a product that is coming from ANSTO that is going through a facility like the plant at Kurnell, then—

Mr BYRNE: We have a trade waste agreement with Sydney Water.

CHAIR: Who assesses whether it is acceptable? You have concerns, your council has concerns, but who is the arbiter of the safety of that final product?

Mr BYRNE: I do not know. I can only say that ANSTO has indicated that it can recycle it.

CHAIR: Perhaps you can take that question on notice.

Mr FLETCHER: I think there is a delineation between New South Wales Health and Sydney Water. But we will certainly come back to you on that.

I draw the committee's attention to our submission. Obviously the committee will be hearing different alternatives from a range of proponents. I will not comment on the merits or otherwise of the various proposals. We have made it clear in our submission that whatever proposals are put forward they should be subject to some fairly rigorous standards and tests. Ideally, the various options being put forward should be subject to comprehensive cost-benefit analysis that will give consideration to the socioeconomic impacts of the various proposals. Our submission at pages six and seven outlines the sorts of issues that should be addressed.

Mr BYRNE: Local government is very much on board with the water issue in Sydney. My feeling from being on the executive of the association is that local government across New South Wales recognises this as a major issue. We are certainly hearing that from the communities as well. Engagement with local government on these issues will be very important. I do not think the committee will find resistance from local government; there is a real interest. A lot of the things we do require water; water plays a big part in a lot of the work we do locally. Consequently, local government across the spectrum sees this as a big priority for Sydney.

The Hon. RICK COLLESS: Following on from your concerns about the ANSTO waste, what happens to the radioactive waste that comes out of the hospital systems; does that have to go back to ANSTO?

Mr BYRNE: My understanding is that that is discharged into the sewer, and no doubt that is part of the trade waste agreement with Sydney Water.

The Hon. RICK COLLESS: So there could be a potential problem if we are recycling some of this stuff?

Mr McDONELL: There could be. I cannot answer that because I do not know what the hospitals do. There is at least one nuclear medical facility in the shire that I know of that would no doubt be discharging into the sewer. What they discharge, I do not know. I do not know about their treatment and it would be wrong of me to speculate on that.

The Hon. RICK COLLESS: We will follow that up in other forums. You say in your submission that you are not opposed to the desalination plant per se, but that it must be thoroughly investigated. As this has been identified under this new critical infrastructure legislation, does that not remove your right to have any input into the process?

Mr McDONELL: At the outset, the association is opposed to the critical infrastructure approach that removes the ability of local government to be involved in these types infrastructure developments. However, given the current situation with the desalination proposal, how critical is it now? I would hope that the Government would take the opportunity to employ a more vigorous environmental approach to the project, given that there is now time to do that; and the Government is talking about dam levels falling below 30 per cent. I am aware that you will be hearing more about that in the presentation from Sutherland Shire Council.

The Hon. RICK COLLESS: Would the association like to see the 125-megalitre plant declassified as critical infrastructure and go through that full environmental process?

Mr McDONELL: Yes, most definitely.

The Hon. RICK COLLESS: You mentioned also that you were opposed to privatisation of the water industry in Sydney. Are you opposed also to competition in the water game? For example, if a stormwater collection system were installed, would you be opposed to that being undertaken by the private sector? Or would you like that to be done by Sydney Water?

Mr McDONELL: We have said, and the association has adopted this as policy, that we are opposed to the privatisation of ownership and operation. That is not to say that the private sector will not be involved in some type of PPP. From the point of view of the association we are concerned that the water is such an important public resource, the provision of the service should not be driven by a rate of return on investment in infrastructure to provide that service. It should be driven by the need to provide a service to the community.

The Hon. RICK COLLESS: Does Sydney Water now pay a dividend to the Government?

Mr BYRNE: And that is one of the problems.

Mr McDONELL: That is because it is corporatised. Not only that, there are other corporatised organisations, State instrumentalities, and the association has considered this in relation to water authorities across New South Wales. We are opposed to the corporatisation of those bodies because they should be run as a private entity, returning a rate of return on investment in the enterprise. It is our view that is not an appropriate way of conducting provision of water to the community.

Ms SYLVIA HALE: Earlier the Committee heard evidence from Professor Essery and fining people who do not that the continuation with restrictions was not necessarily a good policy if appropriate recycling and reuse facilities were put in place. It is my understanding that local government is responsible for monitoring and fining people who do not comply with restrictions. Are you finding a hardening attitude to those restrictions, or is there a preparedness to continue to comply? Is there a need to be monitoring what people are doing in their backyards all whatever? How much additional burden is that placing on local government?

Mr McDONELL: It is my understanding that Sydney Water polices water restrictions, not local government as such.

Ms SYLVIA HALE: Is that your understanding also, Mr Byrne?

Mr BYRNE: Yes.

Ms SYLVIA HALE: Councillor McDonell, earlier there was discussion about the culture of Sydney Water and how, particularly over the past decade or so, it seemed to be preoccupied with spin. There was considerable criticism of its failure to speak out with regard to the desalination proposal or the water shortages facing Sydney. From your long experience within Sydney Water and being on its board, do you think that is a fair criticism of Sydney Water?

Mr McDONELL: The short answer is no. I expand that by saying that it is a decade since I retired; I was on the board for 10 years up to 1994. We need to keep in mind that Sydney Water is a corporatised body and the shareholders of Sydney Water are government Ministers. To that extent it is

answerable to the Government and still, to a very large degree to my understanding, under direction from those ministerial shareholders, who are Ministers of the Government. I think it is very unfair to attack Sydney Water in that way, because they are tasked to undertake what the shareholders require. The question should be directed to the shareholders. I do not detect any cultural problem in Sydney Water, it has its own culture, which I will expand on, it would take all day. Does that help you?

Ms SYLVIA HALE: Last year legislation was introduced to allow councils to have the option of raising a stormwater management service charge on urban properties to fund a stormwater management activities. Are councils proposing to introduce those charges?

Mr BYRNE: Most councils in New South Wales are looking at their budgets now, and that involves discussion of the new stormwater levy. The problem is that we do not have any regulation check, so there is certainly an interest in local government, and that is the feedback that the association has had. A lot of councils call into the association and ask what is happening with the regulation. It is quite hard for councils to make a decision in this current budget process without the detail of the regulation. There is certainly interest.

My council, Marrickville, is looking at funding a rainwater tank rebate system through the levy, but we do not know enough about the levy. If we do a good budget process that starts early, before the beginning of the year, we would need to have that information in front of us. It should be flagged to the Government that it is urgent that we need these details sorted out so that councils can do something in the coming financial year.

Ms SYLVIA HALE: Given that most councils would be, one assumes, well ahead with their budgets, and the regulations are produced very quickly, the opportunity to do anything will be lost this year and we will have to wait a further 12 months.

Mr BYRNE: That is right. The LGSA is in discussion with the Department of Environment and Conservation. It was a month ago that we had the draft regulation, or at least the beginnings of it, but nothing has happened since then. Again, if we want action on stormwater issues in the next financial year we need the details to be sorted out.

Ms SYLVIA HALE: Councils are required also to produce water saving action plans—and not only councils but also government agencies and businesses. Are those plans on foot within councils? What stage has that reached? Similarly is it hindered by a lack of direction by government?

Mr McDONELL: There has been considerable dialogue between the Local Government Association and the Regional Organisation of Councils during 2005 about that issue, about the actual development of those plans. I would think that most councils are well and truly on track to provide those plans to the Government on time.

The Hon. GREG DONNELLY: Councillor McDonell, are councils giving any particular priority to recycling water? Are there any recommendations from your association to councils in any particular area?

Mr McDONELL: As far as the association is concerned, I am unaware of any particular direction in that regard. I know that councils are taking steps to improve local recycling. However, we have just started discussions about that but it depends what you mean by recycling. Are you talking about recycling on site for individual properties? We are having discussions with the Government on regulations to introduce recycling of laundry and shower water. We have just started discussion on those regulations. There is a real willingness to follow that path. On the question of larger scale recycling at large developments, in my area there is at least one development company that has achieved what I consider to be considerable recycling of roof water for garden watering and so on.

That same company is about to embark on a large project development, about five storeys and probably 200 units. From the information given to us so far, they will recycle roof water for gardening and toilet flushing. My council has built and established what is known as a small business incubator in a building, half of which is occupied by Wollongong university. It is a new building and we are recycling stormwater for flushing toilets. The car park has been constructed with a surface that

takes the run off from the car park into a recycling system. The council is pretty proud of what it has done.

CHAIR: You say it is a porous surface on the car park that directly infiltrates into the system?

Mr McDONELL: That is right, and used for garden watering and for flushing toilets. Could I just make one other comment on the question of stormwater? I guess this is probably a personal view on it, but I think the stormwater is a hidden, if you like, burden that local government is likely to be struggling with eventually—more so than they are now. I know that in a number of areas the councils are undertaking stormwater management to protect local waterways by constructing artificial wetlands and this type of thing. For example, in my own council they have done it in relation to national park. But what is missing, of course, is the opportunity to recycle that water for some other use. But, broadly speaking, I think right across Sydney the question of stormwater is a bit of a hidden agenda for local government.

CHAIR: In terms of the water saving action plans, is there the opportunity at present, or is it still in the pipeline, so to speak, to reuse grey water in domestic situations? For example, just the simple action of collecting grey water and putting it into toilet flushing, which is obviously about 25 to 30 per cent of average household water use? Can that be done at this time through your organisations? Is there anything stopping that? Is that able to be done under the regulations at present?

Mr McDONELL: I will have to come back to you on that.

Mr FLETCHER: As you may be aware, the Government has recently announced the easing up of the regulations on the use of grey water, and under those plans householders will no longer need to obtain council approval for directly diverting grey water use to gardens and most small water recycling projects will no longer require an environmental impact statement [EIS]. That is the extent of the easing of those restrictions, as we understand it at this point. We are currently having further discussions with the appropriate regulators and central agencies concerning the development of those regulations.

But it should not be forgotten that there may be significant scope for a stronger nexus between recycling water initiatives and water savings measures, and anything that the associations can do to promote that nexus we will be doing in further discussions that we have with the different regulators.

CHAIR: A previous witness to this inquiry has mentioned water metering and social issues involved and payment for water; that people, often with large families, are struggling. I am just wondering whether you could comment from a local government perspective on community service obligations, whether they are effective and whether people are able to receive relief, given certain financial difficulties, large families and suchlike. From a local council perspective, is that in place at the present time or are people suffering? Also, if I could ask you about water metering of, particularly, flats in your local government areas?

Mr McDONELL: As far as local government is concerned with experience of ability to pay, are you referring to local government rates?

CHAIR: Water rates—that is to Sydney Water, but does local government have a role to play in terms of assessment of people's capacity to pay water rates and suchlike?

Mr McDONELL: Outside of the metropolitan area where there are currently water authorities, that may be an issue that we could get some information on, but it is not a question that local government in the metropolitan area is confronted with because we are not responsible for charging for water usage or water rates. It is not something we have got experience with in that regard.

The Hon. RICK COLLESS: In the submission you state—and I think these figures came from the SOE report 2003—that potable water is essential for less than 4 per cent of the total consumption. What do you understand that to mean? Is it kitchen, laundry and shower water or just kitchen water or what?

Mr McDONELL: My comment on that would be that that 4 per cent is drinking water—the amount of water that is actually consumed. The amount of potable water that is used for other than drinking purposes is, of course, much higher than that.

The Hon. RICK COLLESS: Yes, but we would still need to have potable water basically in the kitchen, laundry and shower in a home, would we not? I mean, non-potable water could be used in the garden and in toilet flushing, but in terms of the domestic water usage where people are having contact with water, if I can use that expression, such as in the kitchen, laundry and shower?

Mr McDONELL: I guess it would be a personal view: The water you drink, the water you use to wash up in the kitchen sink; water you use to shower, and possibly even to wash your clothes, people would want that to be potable water. But, of course, the issue there is that shower water and the water that comes out of the washing machine, et cetera, just goes straight into the sewer when it could be used for other purposes. The association has commenced, only in the last month or so, discussions with the Government on the regulations in relation to that recycling for individual houses that may need to be covered by some regulation, apart from what Mr Fletcher has just outlined.

CHAIR: What findings of recommendations would you wish to see the Committee make as a result of this inquiry, from your local government perspective? What would be the most valuable directives that we could place for you from your organisation's perspective?

Mr McDONELL: I guess, in my view, what we would be looking for is an integrated water supply that put us in a position where we are as drought-proof as possible. It would be my own personal view, I hasten to add, that currently we seem to be heading towards the basic outline of the metropolitan plan, as amended recently. But who can say what is drought-proof? I could not, not with the other things that are happening in the world today with climate change, et cetera. But I guess that is what we would be looking for: an integrated water supply. I hasten to say this is just my view. Councillor Byrne might want to add to that.

Mr BYRNE: Yes. The association had four points at the end of its submission, and they are still current. The association wants a full costs benefit analysis for Sydney's water supply. It is Marrickville's view that if you did that you would find that desalination is not the way to go. The other points are there as you have already read. I guess I would highlight, from Marrickville's perspective, a couple of our recommendations, which are towards the end of our submission. One is that we think there needs to be the widespread adoption of rainwater harvesting technology in residential, commercial and industrial areas. We really need to get serious about that local reuse. The easiest and the cheapest way to do it is to do it as locally as possible.

We also think there should be mandatory retrofitting of all publicly and privately owned buildings with water-efficient fittings and appliances. That should be mandatory and we should be getting on with that now. We think that we should no longer be able to make appliances that are not water efficient. We have a system that tells us how water efficient an appliance is. We should not be able to make inefficient ones; we should only be able to make efficient ones. The fourth point I highlight is that we need to engage the community more in this process. We need to ensure that we bring the community along with us.

If I could just take a bit of time, one of the programs we are running at Marrickville is called the urban stormwater integrated management project, or USWIM. We have one small catchment area and we have put some money into really studying it to see what we can do to reduce water usage and to better use the water in that catchment. A local community committee has been set up that is engaged with it. It is in one of our less well-off socioeconomic areas. It is a great little project in a small catchment that is working on different ways and innovative ideas as to how that area could be improved.

One other point is that Sydney is very much an urban area. A lot of the initiatives coming out of water savings are more focused towards greenfield sites. We need to get serious about the retrofitting idea in Sydney and, in particular, in Marrickville as it is an old area that has a lot of old housing stock. We must focus more on what we can do in those sorts of areas and in most of Sydney.

Mr McDONNELL: I wish to add to that. I again emphasise that one of our major concerns is this idea of consultation—taking the community with you. We are where we are now because there was a lot of consultation to start with in a number of areas. But, generally, we seem to be heading in a direction that we support. We need to take local government with us along the way and we need to involve the community. I support what Councillor Byrne just said. The concentration on those greenfield areas in the western part of Sydney is only part of the problem. There must be a greater emphasis on issues. I must admit that Sydney Water is doing a lot towards subsidising retrofitting of houses and that sort of thing. Overall, I think that the plan must take the community with it much more, and much more vigorously.

Mr BYRNE: Set some concrete goals. Recommend some concrete goals so that we can move forward and do it in a shorter time frame.

Mr FLETCHER: The associations were grateful to the Government and commended it for passing the stormwater legislation late last year. It would be helpful if the regulations could be expedited and promulgated as quickly as possible so that those initiatives can be pursued in the next financial year.

CHAIR: Thank you, gentlemen, for your attendance today. It has been most useful to get a local government perspective on the issue. We will use your material well. If there are any other questions arising from your evidence we will get back to you.

(**The witnesses withdrew**)

(**Luncheon adjournmen**t)

JOHN O'GRADY VAN DER MERWE, Director, Sydney Services, 302/37 Bligh Street, Sydney, sworn and examined:

CHAIR: In what capacity are you appearing before the Committee—that is, as an individual or as a representative of an organisation?

Mr VAN DER MERWE: As director of a business called Services Sydney.

CHAIR: Are you conversant with the terms of reference for this inquiry?

Mr VAN DER MERWE: Yes.

CHAIR: Should you consider at any stage that certain evidence you wish to give or documents you may wish to tender should be heard or seen only by the Committee, please indicate that fact and the Committee will consider your request. If that should occur at any time during your presentation, please feel free to make the request. Would you have like to start by making a statement, comment or submission, and that will be followed by questions from members of Committee to

Mr VAN DER MERWE: Thank you very much. I would like to make a brief opening statement to the Committee. Services Sydney welcomes the opportunity to appear before this Committee of Parliament to put its case for large-scale water reclamation. In particular, our submission refers to item (d) of the Committee's Terms of Reference—"The costs and benefits of desalinisation and alternative sources of water including recycled wastewater, groundwater, rainwater tanks and storm water harvesting". As you will see from our submission, the company has been trying for several years to build world-class water reclamation facilities that harvest water from the sewage that is currently pumped into the sea. This practice wastes 450 billion litres of water year, or more than 1,000 Olympic pools per day.

It is important that the Parliament is aware of the immense potential of large-scale water reclamation. It provides significant economic dividends to the community and enormous sustainability dividends to the environment. Firstly, there will be the benefits of drastically cutting the amount of barely treated sewage that is pumped into the ocean every day from the outfalls at Malabar, Bondi and North Head.

Secondly, water from Sydney Catchment Authority storages that should be earmarked for environmental flows in the Hawkesbury, Nepean and Shoalhaven rivers will be saved for drinking. Water from our facilities can easily be substituted for environmental flows. Thirdly, development of large-scale water reclamation will create hundreds of jobs in the construction industry and many more in the future as this water becomes available for agriculture, irrigation and industry. Fourthly, our proposal should place no additional strain on the public purse. We have a sound business plan based on a direct retail relationship with existing customers who can choose to subscribe to our company.

Put simply, large-scale water reclamation for Sydney is vastly the best value for money. It creates jobs, it grows the economies of Sydney and Shoalhaven, and it protects the environment. This should be our legacy for future generations. We have widely briefed community groups, environmental groups and members of Parliament from all sides of politics on this important issue. We see innovation as the way forward. We have the plan, we have the backing of the community and we welcome scrutiny of our proposal by this parliamentary committee. I want to emphasise that it has been and remains the company's preference to work collaboratively with the community and the Government to secure a sustainable water supply for Sydney.

CHAIR: In terms of the sustainability of your projection, there has been some criticism that you are just cherry picking, that you would be able to get the resource that has been partially treated further upstream and utilise that. Is that taking advantage of the public infrastructure?

Mr VAN DER MERWE: Our proposal should be compared to Optus and Telstra. We want to utilise the existing facilities of Sydney Water and a comparison would be Telstra's telephone exchanges. We need that. Some committee members may be aware that we have gone to the National Competition Council and the Australian Competition Tribunal about that. In the case of cherry

picking, the quality of the sewage that arrives at Bondi, North Head and Malabar and is discharged into the ocean is barely treated. So there is no cherry picking, it is virtually raw sewage going into the ocean. We need the existing in-ground pipes, sewers, manholes and pumping stations and we intend on behalf of our customers to pay Sydney Water an agreed transportation cost for that, similar to Optus currently paying Telstra a transportation cost for a call. It is very important for us to get a retail relationship with the customer.

CHAIR: One of the issues that keeps coming up is the lack of infrastructure to get the effluent back from the east—at the bottom of the hill, so to speak, in the catchment—to the west for re-use. I see in your notes that part of the strategy is for a deep tunnel system to connect the three major ocean outfalls and pipe it back. What infrastructure would your company use to pump it back? Is this new infrastructure that would have to be built, and would this not be cost prohibitive?

Mr VAN DER MERWE: Our company obviously needs to reach customers, so we need to interconnect the three major ocean outfall systems. A deep tunnel system would be needed for that. We want to build modern water reclamation facilities and then we have to take the water back. That will also be a deep-tunnel system. These costs really relate to the headwork costs of the next option of water augmentation for Sydney and should be measured directly against increased Shoalhaven transfers or the cost of desalination. That is all I can say. This is a permanent, long-term fix.

CHAIR: Are you saying that Sydney Water would need to set up the additional infrastructure?

Mr VAN DER MERWE: No, it would be infrastructure that we would like to fund. It is very important to understand how our income stream will work. Currently sewerage services is a bundled cost. So transportation, water treatment, sewage treatment, the retail relationship with Sydney Water's customers as well as a disposal cost is in sewage treatment. Our company would obviously contract with customers and get all that money. We will only have to pay Sydney Water for the transportation component. So the viability of our proposal really relates to how much that will be. Putting that in context, Sydney Water currently gets annually about $750 million for sewerage services. If we get a small portion of that, significant infrastructure could be constructed at no additional cost to the existing customers. That is really where that income stream is going to come from. As to the ultimate return of water to the Hawkesbury-Nepean River, that infrastructure obviously, as I have said before, must be measured against headwork costs for the next round of augmentation.

CHAIR: Have you factored in the Northside Storage Tunnel, which is essentially a massive storage area and a transport tunnel to the sewage works at Manly? Could your system use that tunnel? As I understood it originally, the prospectus for the northside storage tunnel was to have some sort of return mechanism in terms of a pipe going back to the western suburbs. Has your company looked at that?

Mr VAN DER MERWE: We have considered that. The northside storage tunnel is a wet weather overflow tunnel. If Committee members can envisage it, you have a very old pipe system in the ground with many pipe joints. In the old days—100 years ago—pipes were the length of what a man could carry easily on his shoulder. So there are a significant number of joints and they leak in rainfall. These systems are isolated from one another. So the northern system goes out at Manly, the Bondi system goes out at Bondi and the Malabar system—the biggest in Australia extending right back to Liverpool—goes out at Malabar. They generally flow west to east, and the Northside Storage Tunnel is west to east. For interconnection we need north to south down the coast. So the ability then to utilise that asset of Sydney Water in extreme wet weather flows in the Bondi system would be there. The ability to utilise out of the sewer system extreme rainfall occurrences could be transferred into that existing asset. It is quite possible. It is very exciting engineering.

CHAIR: So you are saying that your concept of joining the three systems and utilising them in normal circumstances could facilitate use of the northern tunnel.

Mr VAN DER MERWE: Absolutely. It could be utilised for very heavy and large rainfall occurrences in the sewer system through the north-south interconnector.

CHAIR: Can you advise whether customers who subscribe to your company for sewerage services will not be levied a sewerage charge by Sydney Water? How would you go about that?

Mr VAN DER MERWE: I am not 100 per cent whether I understand the question correctly, but our whole business case is modelled on having exactly the same costs as Sydney Water at this time—no cost increases. So there would not be a levied cost on that.

CHAIR: Can you guarantee that if subscribers go in the direction of your project they will not be penalised in any way by current charges of Sydney Water. Can you guarantee that?

Mr VAN DER MERWE: It is impossible for me to give a guarantee. It would be dishonest if I did so mainly because, after December and the favourable ruling of the competition council, we are now in commercial negotiations with Sydney Water. Depending on how that comes out, we might not be viable. That is possible. So I cannot give a guarantee, no.

The Hon. HENRY TSANG: If customers subscribe to your company but they still use Sydney Water services—for drainage and so on—will they have to pay again?

Mr VAN DER MERWE: No.

The Hon. HENRY TSANG: Why would Sydney Water do all the work so that you get the money? What will you do for them in return? They are Sydney Water pipes; you do not maintain them. How will Sydney Water survive as a business?

Mr VAN DER MERWE: The current sewerage service charges that we all pay to Sydney Water have four components—roughly a quarter each if you look at the historical IPART prices. We currently pay about $400 a year for sewerage services, of which there is a retail component of $100, and transportation component of $100, a treatment component of $100 and a disposal component of $100. That is roughly our understanding of what happens. If you decide to subscribe to our company you will pay the full $400 to us and we will pay the transportation cost—the $100 in this simple example—to Sydney Water. That is how it would work. It is easily measured against Optus or Hutchinson and their retail relationship. I always think of my daughter and younger kids with mobile telephones: they buy credit from any supplier that suits them but they still use Telstra's major exchanges for transportation. I hope that has explained it.

The Hon. RICK COLLESS: If I choose to sell my sewage to you but the Hon. Patricia Forsythe chooses to sell it to Sydney Water, how will that work in practice? It all goes into the same pipes, does it not?

Mr VAN DER MERWE: That is correct. I could probably make an easy analogy. Let us say the full customer base of Sydney Water is 1,000 people today and 100 people subscribe to our company. We will then proxy the equivalent flow right at the bottom of the trunk sewer. If you look at the sewerage systems that the Chairman described, at Manly, for instance, it is a large system that is almost like a tree. It goes to every house, which would be a leaf on the tree. We are right at the bottom of the trunk where it goes into the ground. If a house decides that it will subscribe to us we will take a proxy of that out of the sewerage, very close to the ocean outfalls. That is how it will work in practice. Sydney Water knows exactly how many flows there are—the dry weather flows especially; the wet weather flows, as we discussed in the context of northside storage, could vary depending on the condition of the pipes and where the rain falls. But the dry weather flows are quite constant, on an average basis, for a year.

The Hon. RICK COLLESS: You say in your submission that the new infrastructure will include tunnels, pipelines, water reclamation and biosolids plants. What are your plans for the biosolids component?

Mr VAN DER MERWE: Because we treat the sewage to such a high quality standard to get pure water out of it eventually, there will be a significant amount of bio solids generated. Again, it is our intention to put in class A bio solids and have the very best facilities available for that. That could be applied for a range of uses—for mine rehabilitation and for agriculture, as Sydney Water currently

is doing with their bio solids. If you look how arid Australia is, that is almost a huge resource in itself, which we will treat to a very high level.

The Hon. RICK COLLESS: It certainly is a nutrient resource, is it not?

Mr VAN DER MERWE: That is correct.

The Hon. RICK COLLESS: What, essentially, you are dealing with is all the nutrients that are exported from country areas and farms to the city.

Mr VAN DER MERWE: Ultimately, yes.

The Hon. RICK COLLESS: So it is very much a valuable resource in terms of agricultural fertiliser?

Mr VAN DER MERWE: That is correct.

The Hon. RICK COLLESS: It is something that can be processed to a degree where it is safe to use again.

Mr VAN DER MERWE: That is right.

CHAIR: We have heard about radioactive material in the system, how you deal with that and the original trade waste agreements where there is a significant amount of chemicals in the system. How would your system cope with those inputs into what is much more than a sewage and water combination?

Mr VAN DER MERWE: Sydney Water has a very successful trade waste system at the moment where it is controlled at source. I always give the example of dentistry, which used to have a lot of mercury in fillings. Mercury is not a very attractive metal for the environment. That is virtually now non-existent. If you look at what actually is in the sewage as the EPA monitor, there is no mercury as we sit here today, so most of the nasties have gone. However, there are still some, which have been identified.

However, the good news about Sydney is that it is largely a residential customer base; 80 to 85 per cent of the residents have normal domestic sewage, so we are confident that with today's technology we would get very high quality water. If there are any problems with that, it really will go back to Sydney Water and the EPA to control it at source and make sure that those nasties are removed.

The Hon. RICK COLLESS: When you say "very high quality water", are we talking of potable water quality or something less than that?

Mr VAN DER MERWE: We can go to potable. It becomes very expensive to do the last stage, which is reverse osmosis. Potable obviously is something that is tried and tested in the world from sewage; it is quite safe. We are not going to get a head of community opinion. That is something that you need the support of the community for. There are many other uses of that high quality water. It is our plan to go to what is called micro and ultra filtration, very fine filtration, and also use some UV that will mimic the functions of the sun to do it afterwards.

The Hon. RICK COLLESS: So basically you are talking about providing water for industry and agriculture?

Mr VAN DER MERWE: Essentially, if you look at a sustainable system for Sydney, we are really targeting the Hawkesbury-Nepean and the Shoalhaven separately by not doing the transfer, but the Hawkesbury-Nepean needs quite a significant amount of water for environmental flows. That gives us then the ability to use that river with environmental flows as a conduit for agriculture along it and there are also opportunities to do third pipe residential reuse but only in the new areas. It is prohibitive to put a third pipe in Redfern or Vaucluse, which you could not dig up. It is just

impossible. Ultimately the community will have a major source of water available. Currently 80 per cent of what we extract is almost being pumped out into the ocean—an enormous source of water.

The Hon. RICK COLLESS: And of that 80 per cent—some 400 gigalitres a year is the figure that has been bandied around—what proportion of that do you believe can be put back into the system?

Mr VAN DER MERWE: Government figures currently call for 127 gigalitres a year for environmental flows in the Hawkesbury-Nepean. Theoretically, the rivers without the structures had much more flow in history when those rivers were in their natural state; 127 gigalitres is a base load on us or on any third party is 50 per cent of a customer base. It is a large base load. That is what is available. It will really be driven by customer choice; how the community subscribe to us.

The Hon. RICK COLLESS: But if the community accepted it, the majority of that 400 gigalitres could end up being available for reuse?

Mr VAN DER MERWE: Absolutely, yes. Water, unfortunately from a business model, has God involved, so we can be running the facility very well and then the dams can spill in two weeks time, which comes out of the sky. You just do not know.

The Hon. RICK COLLESS: And that will happen.

Mr VAN DER MERWE: That will happen, and then there will be a much purer product put into the ocean.

Ms SYLVIA HALE: Presumably you are relying upon the attraction of sewage not going out to sea; the community's perception of the benefit from that to attract customers because they will not necessarily be paying any more than they are currently paying to deal with Sydney Water?

Mr VAN DER MERWE: That is correct, hopefully if we get an acceptable interconnection agreement.

Ms SYLVIA HALE: So from the customer's point of view, the downside maybe possibly that they have two bills to deal with rather than one.

Mr VAN DER MERWE: There will only be one bill.

Ms SYLVIA HALE: I thought that they would have a bill from Sydney Water and a bill from you?

Mr VAN DER MERWE: I was incorrect. There will still be a bill from Sydney Water for water consumption, which is measured, but for sewage services there may not be a bill if they do subscribe to a company like ours.

Ms SYLVIA HALE: You say that one of the beneficial outcomes is that water could be transferred back to the Hawkesbury-Nepean.

Mr VAN DER MERWE: Yes.

Ms SYLVIA HALE: Would that transfer come at a cost? Would the Government have to pay for this water to be put it back into the river?

Mr VAN DER MERWE: It really goes against what the community wants to do with the next augmentation for Sydney, similar to the desalination plant. We are talking about $1.3 billion that ultimately gets paid by the customer, not the Government.

Ms SYLVIA HALE: I quite agree; I am just trying to get some clarification. Would you charge the Government for that water?

Mr VAN DER MERWE: Absolutely. Our position is that environmental flows are the responsibility of the Government.

Ms SYLVIA HALE: One of the problems with the cross-city tunnel and even with the new southern railway has been restrictions on the Government competing with the private operator, for example with the tunnel, with augmenting public transport services. What would be the company's position if Sydney Water determined that it wanted to engage in sewage reclamation? Would your contract require that it be prohibited from doing so?

Mr VAN DER MERWE: No, it would be the choice of the consumer who they would want to subscribe to. The customer will choose.

Ms SYLVIA HALE: So you would have no objection?

Mr VAN DER MERWE: Not at all.

Ms SYLVIA HALE: Or there would be nothing written in the contract to stop Sydney Water building its own plants?

Mr VAN DER MERWE: No.

CHAIR: Following that logic, various witnesses have described optimal reuse at source rather than going all the way down the pipe system and all the way back up again. Essentially, your system is "all the way down and all the way back". You are talking also about future head works to have the Government develop systems that would transport, either by its system or under its auspices or under yours. Is there not the potential for Sydney Water, if it were to say, for example, that it was going to become state of the art, to develop quite intense recycling programs close to the source, such as sewer mining operations that process, contain and reuse the effluent out in the Liverpool area and such like. Would that not threaten the viability of your services and your opportunity?

Mr VAN DER MERWE: The reality is that we support the local waste recycling schemes in Sydney like St Marys, the north-western area, Liverpool, Glenfield where reasonably high-quality effluent are being produced. However, the reality of Sydney is that is not enough and in the long-term and the medium-term the major ocean plants will be needed. The fact of our forefathers, and the ability of the ocean to be a wonderful treatment plant out of sight, out of mind, is fact today: the trunks run to Bondi, Malabar and North Head could not be changed. In many cases 80 per cent of those areas are in heavily urbanised areas. If you take a snapshot of Sydney really from about Liverpool north-south you find medium density living and all those customers almost cannot participate in recycling because they live in units or small blocks and their sewage heads east into the ocean but they pay the full sewerage services charge.

Ms SYLVIA HALE: Your scheme depends upon the treated effluent, or whatever, moving back out west or wherever. Would that not involve a great energy usage in terms of pumps? Would that be at considerable economic and environmental cost in relation to energy use?

Mr VAN DER MERWE: I would like to put that in context. I am a bit of an engineer so I may disappear down a rabbit hole, if you will excuse me. Our scheme does not depend on that because if we are a sewerage services provider we will compete with Sydney Water and say to the community we are pumping pure water into the ocean. The community will decide whether it is right to pump pure water into the ocean or whether to do desalination, or do the inequitable thing with the Shoalhaven. So that decision will be made in future by the customer.

The base of the Hawkesbury-Nepean just below Appin-Wilton-Pheasants Nest when you drive across the high bridge on your way to Canberra is plus-65 metres above sea level, actually quite low. Sydney is quite flat. You yourself might be at about 100 metres above sea level. The cost of desalination before you pump it anywhere is equivalent to the pumping of water 1,800 metres high—six times the height of Centrepoint. So there are costs associated with taking water back to the Hawkesbury-Nepean but in that context you have to raise it 65 metres at very small pumping costs.

In addition, you do not have the energy to pump it into the ocean because every megalitre of water we take out of the ocean plant we apply to go back to the Hawkesbury-Nepean and, in addition as the Hon. Rick Colless said, when you get out biosolids you also extract significant amounts of methane, a natural gas that could be used and utilised to really fire up electricity plants. But there will be energy requirements, yes, but it would be significantly less than the next augmentation in this context of the Shoalhaven transfers up to the back of Bowral is 607 metres: we are 65 metres. So, I am happy to compete at all times against those two. It is by far the best value for the community.

The Hon. PATRICIA FORSYTHE: Do you have an existing model of your proposal that the committee could identify?

Mr VAN DER MERWE: In the context of the business?

The Hon. PATRICIA FORSYTHE: In the context of the actual engineering and the system.

Mr VAN DER MERWE: The best model, perhaps and the most modern plant, is the Singapore plant—a beacon in water reclamation. The difficulty all of us have in the community is the education side. People fear the unknown when they are kept in the dark but once you educate them up—it is almost like taking a kid in year 6 and asking him to write a Higher School Certificate, without having those years. So the education side is quite large. That is the best example in the world. There are many others. Our position quite clearly is that Australia is probably one of the driest countries in the world. We would not be sitting here if we had ample water sources like Canada and Switzerland with huge quantities of snow.

The Hon. PATRICIA FORSYTHE: Ms Sylvia Hale asked about what you might do with the product, whether you would send it back inland and at what cost. You said that the customer would decide. Who is the customer?

Mr VAN DER MERWE: The customer in our case would be the household, the industrial customer, someone that needs sewerage services so it is an existing customer, an existing consumer of that service, currently provided by Sydney Water.

The Hon. RICK COLLESS: That could include people that you might ultimately end up selling water to for industrial purposes also?

Mr VAN DER MERWE: It could, yes, under a separate agreement so that we can actually recover that resource and sell it.

The Hon. HENRY TSANG: You are selling recycled water back to Sydney Water?

Mr VAN DER MERWE: No, it would not be back to Sydney Water. We will have a bulk source of water, if it goes into the storage systems—so it will go to the Sydney Catchment Authority—but we are not planning to sell it. Our business model stands without selling one megalitre of water.

The Hon. HENRY TSANG: Do you sell it to the industry?

Mr VAN DER MERWE: We will sell it to industry and agriculture.

The Hon. HENRY TSANG: The Government is already constructing a dual pipe system so there will already be competition—

Mr VAN DER MERWE: Absolutely, yes there would be.

The Hon. HENRY TSANG: Is the market able to carry two sources of recycled water in the near future?

Mr VAN DER MERWE: It is really whether you include into the market a sustainable system and the needs of the Hawkesbury-Nepean—that is the debate. What we are saying is if you

include, on behalf of the environment, the needs of that river system you have a significant market. If you only include an industrial user as your market, it is a smaller market.

The Hon. HENRY TSANG: The community would bear some of the costs?

Mr VAN DER MERWE: If they subscribe to us, yes.

The Hon. HENRY TSANG: Even if they do not subscribe to you, you have abundant water and you need to dispose it to the Nepean River?

Mr VAN DER MERWE: Absolutely. It is a head works cost.

The Hon. HENRY TSANG: Ultimately the taxpayer will pay for that?

Mr VAN DER MERWE: Like they would be paying for desalination or the pipes from the Shoalhaven—the customer will pay for that, that is correct.

The Hon. GREG DONNELLY: The engineering project is obviously very complex. Would you provide an indication of the timeframe to complete the proposed project? What are you thoughts on the planning and environmental issues that will have to be faced?

Mr VAN DER MERWE: I would firstly want to talk about the timing. If everything goes well for us—we have high hurdles to cross, we have to do environmental impact studies—could be 12-18 months to do that. The actual construction could be anything between three and five years, dependent on our customer base, so the water reclamation plant will be constructed on a modular basis, but the inter-connection systems are not, will be constructed for the ultimate usage.

Mr VAN DER MERWE: We certainly have. You will probably understand that we were consumed in complex legal argument for the last two years. We are through that now and we are focussing very diligently on all these issues. In our mind there are not many large issues we have to address. There are some areas where we need assistance—very old planning Acts. The Water Management Act is very old, what you can do, so there will certainly be reforms in those areas as well.

The Hon. HENRY TSANG: I am intrigued by your mention of Singapore. What system do they use? Are people in Singapore and visitors, tourists, drinking recycled water? Do they catch all the stormwater as well?

Mr VAN DER MERWE: I would like to talk to you briefly about Singapore. Singapore has a four tap system. That is where their future is. They currently get most of their water out of Malaysia. They want to go to 25 per cent of their water supply for that. They want to get 25 per cent of their high-quality water supply from sewage, 25 per cent from desalination and then 25 per cent from runoff from the sky. That was their plan in 1998. They were planning to construct, to the best of my knowledge, an equal amount of desalination plants and new water plants. Once the new water plants have been up and running—I think they have completed six—their choice is to have new water because of the value for money and they have only done one small desalination plant.

The question of whether the people in Singapore drink the stuff, they currently drink the water from sewage. They currently put about 2 per cent back into the storages. To put that in context, in Warragamba we currently have the effluent of Lithgow through the Cox River, the effluent of Goulburn through the Wingecarribee River, Bowral. It happens all over the world. What we want to do is to put pure water when the community decides that it is ready for that. So in Sydney there would be stuff in this today that ultimately came out of Lithgow, Katoomba.

The Hon. HENRY TSANG: What is the cost of water in Sydney compared to Singapore?

Mr VAN DER MERWE: It depends on how you measure the cost. Generally the cost of water being sold in Sydney is about $1,000 a megalitre. The levelised cost for the desalination plant was about $1,500 or $1,440. Large scale water reclamation can produce water at a third of that cost—

$400 or $350 a megalitre at factory gate. Then you have to take it back, the cost in the sale inquired about so for the amortisation of the transportation system back, which will be an additional cost.

The Hon. HENRY TSANG: So the Singapore water is relatively the same as Sydney water?

Mr VAN DER MERWE: The Singapore reclaimed water or the—

The Hon. HENRY TSANG: The whole package if it is divided four ways.

Mr VAN DER MERWE: I do not know. I cannot answer whether it is exactly the same. Generally once you do reclaimed water through reverse osmosis that water is purer than the water you would find in the storages.

The Hon. RICK COLLESS: If you take all the water that is currently going out to sea, the 400 gigalitres, what would be the capital cost involved in setting up your proposal, and what would be the variable cost per gigalitre of producing it once the capital cost is factored in?

Mr VAN DER MERWE: Obviously this is price sensitive stuff. I would like to answer that in private if it is possible, if the Committee feels that. We have been in a situation where we opened it up to third party access so we will be competing.

CHAIR: Given the time, is it acceptable if you take that on notice and we receive that from you in writing as confidential?

Mr VAN DER MERWE: Thank you.

CHAIR: We are a little over time so you can furnish that information and we will treat that as confidential.

Mr VAN DER MERWE: Thank you.

(The witness withdrew)

LEIGH JAMES MARTIN, Urban Campaigner, Total Environment Centre, Level 2, 362 Kent Street, Sydney, affirmed and examined:

CHAIR: In what capacity are you appearing before the Committee? Are you appearing as an individual or as a representative of an organisation?

Mr MARTIN: As a representative of the Total Environment Centre.

CHAIR: Are you conversant with the terms of reference of this inquiry?

Mr MARTIN: Yes I am.

CHAIR: If you should consider at any stage that certain evidence you wish to give or documents you wish to tender should be heard or seen only by the Committee, please indicate that fact and the Committee will consider your request. Would you like to make a short statement?

Mr MARTIN: Briefly, the recent decision to shelve the desalination plant presents this State and this city with an opportunity to move to a more sustainable approach to urban water management. The strategy that is being pursued of utilising groundwater resources for several years has something to recommend it, only if it is used as an instrument to buy some time to develop a more sustainable approach. Exploitation of groundwater reserves has its own environmental dangers if those resources are overexploited. So it is important that we view the strategy that has been adopted as an interim measure which will allow the development of more sustainable approaches, including significant efforts on recycling, major efforts on price reform over and above those which have already occurred, and an increased emphasis on demand management.

CHAIR: Are there any other issues that you would like to add in terms of your description or a definition of what you would see as a sustainable water supply for Sydney?

Mr MARTIN: We need to recognise that we have extremely limited resources in terms of freshwater reserves and that as we move into a potentially drier climate, with global warming and a growing population, those challenges will increase. The current water shortage problem Sydney has should not by any means be viewed as simply a function of the current drought. It is clear that we have a long-term sustainability challenge. It is important to note that sustainable yield of the current supplies is 600 gigalitres per annum. Before water restrictions demand was running in the vicinity of 630 gigalitres per annum. That indicates that there is an underlying level of unsustainable demand for current water resources.

It is also important to bear in mind that that 600 gigalitre figure for sustainable yield does not include any allowance for environmental flows for the Hawkesbury-Nepean system, which it is well established is a system in severe stress and in need of an environmental flows package.

The expert panel that examined environmental flows for the Hawkesbury-Nepean concluded that a volume of water of around 100 gigalitres a year would be required for an effective environmental flows package. From current resources, the true environmentally sustainable yield is a figure close to 500 gigalitres a year, and that indicates the significant nature of the challenge we have. Obviously, some work is being done now on accessing water from deep parts of storages and also from groundwater reserves, which will increase that figure of sustainable yield. But, as I have said, we need to recognise that there is a major long-term challenge, and there needs to be a major effort on recycling and demand management and I think also on permanent restrictions and price reform.

CHAIR: You refer to permanent restrictions. This Committee earlier today debated the effectiveness of ongoing water restrictions. Some have said it is a great idea, and let us continue the restrictions. Others have said there is a certain public hardening of attitude to long-term water restrictions, and that is not the way to go. Would you like to add to that debate?

Mr MARTIN: I think permanent restrictions need to be viewed as an essential component of long-term sustainable water management. Both Melbourne and Adelaide have adopted permanent water conservations measures as part of their long-term water sustainability strategies, and I think we

need to adopt that approach in Sydney. I think the restrictions have been well received by the public, and it is clear from the reduction in consumption that has occurred under restrictions that the public have met the challenge well, have certainly been prepared to play their part, and have adapted well to those restrictions.

I think it is also important to note that since restrictions were introduced the current demand has, for the first time in many years, fallen below the 600 gigalitre figure of sustainable yield. It is only with restrictions that we are currently below that 600 gigalitre figure. If we remove restrictions, we will once again go back to a situation where demand is above the restrictions figure. Given that people have adjusted their behaviour and moved towards more sustainable practices, it is important not to abandon those gains, and the potential long-term benefits that the changes in consumption practices have had for us, by abandoning restrictions simply because we get some rainfall and there is an increase in the level of storages.

CHAIR: In terms of clever alternative strategies, you have mentioned demand management, water efficiency, and of course ongoing water restrictions. Does your organisation, which has a quite substantial public interface, have any other plans that perhaps this Committee has not heard about so far? Apart from aquifer resource usage, et cetera, do you have any other strategies that that could have a beneficial impact and could be worked on co-operatively between government and other instrumentalities?

Mr MARTIN: I think the Government needs to embrace recycling in a major way as part of the long-term solution to Sydney's water needs. That may include both non-potable reuse and potable reuse. We have examined the option of utilising highly treated effluent from western Sydney sewage treatment plants. Most of those treatment plants—all but a couple in fact—are currently treating effluent to tertiary standard, with further disinfection, and it would be a relatively simple matter to treat that water to bring it to drinking water quality**.** It could simply be reused indirectly via Prospect reservoir. In the information that we have included in our submission we give an analysis of the quantities of water that could be recouped by that strategy, as well as the means that would need to be employed to make that water safe. Quite simply, you could mix it with Prospect's water, and the simple upgrade of membrane filtration technology at the Prospect water filtration plant would then make that water drinkable.

I know there is resistance in some levels of government to the idea of potable reuse, on the basis of concern about the community response to that. I think there needs to be significant education of the public in this respect. But I also think there needs to be recognition that people in some parts of Sydney are already indirectly drinking treated effluent. Residents of Richmond and Windsor access their water directly from the Hawkesbury River. That flow includes highly-treated effluent from the Western Sydney STPs that is discharged into the Hawkesbury River. So, for the residents of Richmond and Windsor, indirect potable reuse is a fact of life, as it certainly could be for other residents in Sydney. I guess the principal advantage of potable reuse is that it offers the convenience of not having to develop a second set of pipes, as one would need to do with a dual reticulation system.

CHAIR: Have you made any assessment as to the extra cost of potable reuse as against the cost of the addition infrastructure necessary to install dual reticulation systems?

Mr MARTIN: I am not sure of the exact comparison between the two. Certainly, it is unlikely that dual reticulation could be applied across the entire Sydney metropolitan region, simply because of the prohibitive nature of laying a second set of pipes for all areas. Dual reticulation has its greatest potential in new urban release areas, for which it is being proposed, where the infrastructure is being developed at the start, or indeed even in major urban redevelopment projects where, because of a significant increase in density, major redevelopment and economies of scale may be there to introduce a second set of pipes. But it is unlikely to be easy to do in areas that are currently settled and not subject to significant redevelopment projects. In that respect, potable reuse offers the advantage of not having to deliver that second set of pipes. It also means that recycled water would be consumed by everyone across Sydney, and you would not have a situation where some residents are being asked to drink recycled water and others not.

The Hon. PATRICIA FORSYTHE: I would like to ask you a question about permanent water restrictions. Can you tell me if there is absolutely any difference between a person who hoses their roses for one hour and the person who hoses down walls or paths?

Mr MARTIN: I guess it depends entirely on how much water they use to do that, and how and when they hose their roses. If they are hosing their roses at 6 o'clock or 7 o'clock in the evening, and they are mulching their gardens, they will need considerably less water to do that than someone who waters at midday and has no mulch or any other water-saving material on their gardens.

The Hon. PATRICIA FORSYTHE: But if they walk around for hours with their hose turned on, regardless of what they are doing, even washing their car, they are using the same amount of water.

Mr MARTIN: That is right, and that is certainly an inefficient use of water.

The Hon. PATRICIA FORSYTHE: Yes. But, at the end of the day, there is intellectual dishonesty in this whole argument that you can do some things but not other things.

Mr MARTIN: I am not quite sure what you mean.

The Hon. PATRICIA FORSYTHE: It is about free choice of people. There are restrictions on what you can do with a hose at certain hours of the day, but some things are deemed to be acceptable and others are not. At the end of the day, you are still using the same amount of water.

Mr MARTIN: I think a judgement needs to be made about what is the highest value to the community of the use of that water. It is my view that we need to recognise that water is a scarce community resource, and that if it is used profligately the funds that are needed to develop augmentation of supply are also a scarce community resource. Is it of greatest benefit to the community if someone uses that water to hose down a driveway or their car as they please? Or are there move effective and greater benefits to the community if we introduce some controls on how that water is used? I guess that is a philosophical debate. My view is that it is simply not justifiable, not for the greater public good and the best use of a public resource, for water to be used profligately and however people please.

Ms SYLVIA HALE: In your submission you talk about the perverse incentives to under-invest in demand management. Would you like to expand on that?

Mr MARTIN: I think it needs to be recognised that Sydney Water is an organisation that has conflicting objectives placed upon it. In one respect, there are requirements within Sydney Water's operating licence for that organisation to meet demand management targets—which it has not succeeded in meeting to date. There are also requirements on Sydney Water to return a dividend on the public investment in the organisation's infrastructure, and to return a dividend to government. In many respects they are competing objectives, so the organisation is pulling in different directions.

At the moment, if Sydney Water fails to meet its demand management targets, it will by selling water earn greater revenue and return a greater dividend to government. The Independent Pricing and Regulatory Tribunal [IPART], in setting prices for Sydney Water has in the past assumed that Sydney Water would sell a quantity of water equivalent to its demand management targets. Several years ago I believe it estimated that Sydney Water would, as a result of failing to meet its target, earn somewhere in the vicinity of $36 million to $72 million in additional revenue above that which IPART had allowed for. So, there is certainly a perverse incentive there to sell more water while at the same time its operating licence requires it to save water.

One way of addressing that, which we have argued but to date the Independent Pricing and Regulatory Tribunal has not supported, is the introduction of a wholesale step price. That means essentially that if Sydney Water purchased from the catchment authority water in excess of that required to meet its demand management targets, it would pay a premium for that bulk water above the demand management targets, just as under the residential step pricing and the retail step pricing system that has just been introduced users who consume over a certain threshold will pay a premium for each additional kilolitre. What to do with that revenue is then open to question, and I think probably the most effective way of using any revenue from a step price or penalty price would be to

hypothecate those funds into the demand management fund or, for instance, the Government's water-saving fund that it has just released the first round of funding for.

Ms SYLVIA HALE: The Committee has just heard evidence from Services Sydney. As you are aware, they now have access to Sydney Water's infrastructure. Does the Total Environment Centre have any view on the opening up of the system to competition?

Mr MARTIN: We have supported the opening up of particularly access to the storage system for recycled water purposes to competition and to the private sector. It must be said that Sydney Water has failed abjectly to develop and promote recycling in Sydney. So, we have a very low degree of confidence in Sydney Water's commitment to and capacity to implement recycling. So, in that case it is essential, we believe, for there to be access to the private sector in delivering recycled water to Sydney.

Ms SYLVIA HALE: Returning to your previous answer, you did say that IPART had resisted your request for step purchasing?

Mr MARTIN: Yes.

Ms SYLVIA HALE: Did it give any reasons for opposing that?

Mr MARTIN: I think that question would be best directed to the Independent Pricing and Regulatory Tribunal.

Ms SYLVIA HALE: It did not give any public explanation?

Mr MARTIN: I think it exercised some concerns about whether it would be an effective approach and we perhaps had a difference of opinion with them on that, and also concerns about what would be done with the additional revenue once Sydney Water had incurred a penalty. As I said, it is certainly our view that the most effective way to use any revenue obtained from Sydney Water from the wholesale step price would be to hypothecate it into the demand management fund. If you have a wholesale step price, there is also the question whether that price can be passed through to the consumer, but it is certainly my view that if you allow Sydney Water to pass that cost through to the consumer, that wholesale step price ceases to act as an incentive for Sydney Water to become more efficient, because it does not represent a burden on it but simply one it can pass through.

Ms SYLVIA HALE: Your submission notes the introduction of BASIX.

Mr MARTIN: Yes.

Ms SYLVIA HALE: Do you think the BASIX requirement should be strengthened in any way, particularly with regard to water usage?

Mr MARTIN: I think it is probable that over time there may need to be a strengthening of the BASIX requirements. I think BASIX needs to be viewed as an excellent reform and an essential step towards water and energy sustainability. It may be that in future technology to make homes more water efficient will improve and it may be possible to cost effectively achieve a higher standard for new dwellings than can be achieved now. So, the standards in BASIX may need to be reviewed in the future if technology improves and a higher level of water efficiency is more easily achieved.

The Hon. RICK COLLESS: Can I go back to the comments you were making about the sustainable yield of 500 gigalitres per year? Where does that figure come from?

Mr MARTIN: That figure comes from the fact that the current sustainable yield without any consideration of environmental flows is 600 gigalitres per annum. The environmental flows expert panel that examined the environmental flow requirements for the Hawkesbury-Nepean river system estimated that approximately 100 gigalitres per annum—

The Hon. RICK COLLESS: So we are talking about the yield that comes out of the catchment?

Mr MARTIN: The yield in the current storages, yes. So they estimated that an effective environmental flows package would require approximately 100 gigalitres of water to be released for environmental flows. So it is a simple arithmetic exercise to realise that an environmentally sustainable yield, if you have an environmental flows package, from the current resources is 500 gigalitres per annum. Clearly, we are well in excess of that with restrictions to 630.

The Hon. RICK COLLESS: I am still a little confused where that figure comes from. Is that a long-term flow figure out of the river system?

Mr MARTIN: That is the figure at which you can continue operating, demand can continue operating, without over time running the current storages dry. So, 600 gigalitres is the annual figure that you can continually extract from your current resources, being Warragamba Dam and the other smaller metropolitan dams, without effectively running the risk of over time depleting your resources.

The Hon. RICK COLLESS: So you are saying that the average flow out of the, say, Nepean system at the point where Warragamba Dam is, the long-term average flow at that point is 600 gigalitres a year?

Mr MARTIN: It is not necessarily the flow out of Warragamba, but the quantity of water you could sustainability extract from our current dams is 600 gigalitres per annum. The term "sustainability" in that respect applies to how much you can use without depleting the resource. It does not, of course, take into account the environmentally sustainable figure, which includes the environmental flows package.

The Hon. RICK COLLESS: This morning we heard from Dr Essery from the University of Western Sydney that by his estimation harvesting the stormwater runoff from the metropolitan area could yield an additional 500 gigalitres per year. So, should we not be seriously looking at that as an option?

Mr MARTIN: Absolutely. There is no doubt that stormwater harvesting is another essential component of a long-term solution. If you look at the report of the Peak Environmental and Non-Government Organisations that was included in our submission, you will see that it gives particular attention to the issue of stormwater harvesting and stormwater polishing. We need to recognise that it is a geographical misfortune that we happen to have our catchment dams in the driest part of the Sydney basin and our settlement in perhaps the wettest part of the Sydney basin. More of our rainfall occurs closer to the coast that in the catchment of our major dams. So, we have on an annual basis a major potential source of water in stormwater flows not being utilised, and it is certainly part of an overall sustainable strategy that we should be making greater use of our stormwater resources.

The Hon. RICK COLLESS: Can I go back to an issue raised by the Hon. Patricia Forsythe, and that is this issue about water usage and restrictions, and so on. Do you believe that when you pay for your water, should that be on the basis of 100 per cent user pays or should there be a standing charge—such as there is now where you pay a certain amount per quarter which allows you so many kilolitres—

Mr MARTIN: Are you referring to the proportion of fixed charges as opposed to usage charges?

The Hon. RICK COLLESS: Yes. As I understand, at the moment you pay a fixed charge and that allows you to use up to so many kilolitres of water per quarter?

Mr MARTIN: That is not quite the case. We have just had introduced a two-tiered pricing system, which means you pay a certain rate per kilolitre up to, I think it is, 100 kilolitres per quarter, and above that you pay an additional rate per kilolitre. There is no allowance. For instance, under the old system many years ago it would have been so-called excess water where you essentially have an allowance.

The Hon. RICK COLLESS: But there is a minimum charge?

Mr MARTIN: There is a minimum charge. One of the significant problems with the current pricing structure is the level of fixed charges in current bills, which includes water access charge, sewer access charge and stormwater levies. The problem is that for most consumers fixed charges significantly overwhelm the user charges. There actually is very little incentive for the average consumer to adopt more water efficient use practices, for instance, to install a low flow showerhead, to change their washing machines to front-loading systems because there is very little control that customers can exercise over the size of their bill. The last pricing changes that were introduced by the Independent Pricing and Regulatory Tribunal resulted in a reduction in the level of fixed charges towards an increasing reliance on volumetric rate.

We would like to see that process continue, fixed charges significantly decreased and a greater reliance on usage charges. I understand why Sydney Water would resist that, because from a utilities point of view fixed charges offer a greater degree of certainty in terms of their revenue stream whereas a greater reliance on usage charges exposes them to greater revenue volatility. But the tribunal has considered measures to address that, and they certainly have done that in their previous report on price structures to reduce demand for water in the Sydney basin. I think there certainly is an avenue there in future pricing reviews to further reduce the level of fixed charges.

The Hon. RICK COLLESS: We probably would support that point of view, too. But if we go to that sort of a system and in my unit I buy one kilolitre of water or whatever, surely after I pay for that water it becomes my property?

Mr MARTIN: I am not sure what you mean.

The Hon. RICK COLLESS: Under the user-pays system, once I have paid for one kilolitre of water is it then my choice as to how I can use that water? If I choose to put it on my roses, as the Hon. Patricia Forsythe was saying, or if I choose to wash my car with it, it is water that I have paid for.

Mr MARTIN: Under an unrestricted regime, yes, it is. Under a regime of restrictions, it is not. And it is a question for Government and legislators to consider as to whether they want to take the philosophical position that people should be able to use as much water as they pay for, or whether there needs to be some control over how water is used to ensure that it is not used profligately and for unsustainable purposes. The problem with the concept that people should be able to use as much water as they are going to pay for is that those customers who can afford to waste water will waste water, and the burden of water conservation will fall onto those customers who simply cannot afford to waste it.

The Hon. PATRICIA FORSYTHE: I think that if you say to the community that you can water your gardens for two hours a day or you can do what you want in that two-hour time that people may have a better understanding of the use of water.

Mr MARTIN: I am not quite sure I understand your point.

The Hon. PATRICIA FORSYTHE: The point I made this morning was what is the difference between the person who chooses to water the roses twice a week for one hour or so and the person who likes to clean the grime off their walls or the moss off their paths? At the end of the day they are still turning on the tap for the some period of time.

Mr MARTIN: That is right, and it is a judgment that needs to be made as to whether that is an appropriate use of water. My argument would be that hosing down a path or a wall or washing your car with the hose, not using a bucket or a triggered nozzle, is not in the public interest and should be discouraged.

The Hon. PATRICIA FORSYTHE: I will settle for two hours once a year to be able to clean the moss of my path.

Mr MARTIN: Certainly there are alternative ways of doing that. In fact, if you have a look at the regime that is adopted in Melbourne, I think there are some allowances for once a year removing staining from animal droppings from paths, for instance. But I would suggest that it is most

likely that if your driveway or your path is going to be stained by animal droppings it is going to happen more than once a year and you are going to need to clean it more than once a year, and you are likely to get into the habit of using a bucket and a scrubbing brush.

The Hon. PETER PRIMROSE: Returning to the mundane issue of stormwater reuse, my colleague the Hon. Rick Colless already has explored some of the points, but I am interested in knowing if you can point to some examples that are working well on a small scale in the Sydney basin that we might have a look at, if you believe they should be expanded. I am thinking about golf courses and those sorts of things. One instance was mentioned this morning in relation to Sutherland council car park. The next question would be what do you see as the uses for that stormwater? Should it be over paths and golf courses, or do you see it having a much greater role? The final question would be obvious, you need to store stormwater, which could mean large costs in urban areas. How would you see those costs being met?

Mr MARTIN: I am happy to address each of those. In terms of examples, sadly, there are not too many major examples in Sydney that I am aware of. Something I certainly would recommend the Committee give a detailed examination of is the WRAMS system being employed in Sydney Olympic Park, which is utilising recycled effluent as stormwater, as is my understanding, for outdoor water purposes and is actually working very well. They have produced significant reductions in potable water usage for their gardens and other outdoor uses at Olympic Park. I understand they also have a system in place at Flemington Racecourse in Melbourne, which utilises recycled stormwater and that is something the Committee may also wish to give some examination to. In terms of the uses of stormwater, it is entirely dependent on the level of treatment you wish to apply to it before utilising it for whatever purposes. It is worth bearing in mind that what we are drinking from Warragamba, the Nepean Dams and other sources is essentially stormwater run-off that has been filtered through the catchment and gone into those dams, and is then subject to treatment before it is delivered to the consumer.

Stormwater certainly can be used for non-drinking purposes. It also could be treated to the point where it is of a drinkable standard. As for storage, again there are a number of options. There is the option of putting it into current reservoirs or there are also options available in terms of utilising it at the household level. I guess the most obvious example of that is the rainwater tank. Whilst there are some rainwater tanks being installed by households throughout Sydney, the uptake probably is not as good as we would have hoped and there could be an issue of incentives that needs to be addressed. But on the neighbourhood level, or particularly in large multiunit developments, there is no reason why, for instance, underfloor storage of stormwater could not be utilised for purposes such as toilet flushing and non-drinking water purposes.

The Hon. PETER PRIMROSE: In terms of costs, do you have a view about how those costs would be met to construct storage areas and provides the infrastructure?

Mr MARTIN: Obviously, in terms of cost, if it is occurring on a citywide level then they would be incorporated into water bills to customers, just as the cost of constructing and maintaining current water supply systems is part of customers bills. Costs of augmented supply of where that occurs, for instance the pumping of the deep water that currently is accessible from dams, will be met from customers' bills, so it could be incorporated that way. In terms of utilising at the level of units, that again would be an issue that probably would be met at the development stage and, ultimately, that may be factored onto the cost of those developments, but also it would reflect a saving to the customers who would have a source of water for a number of purposes that would be significantly cheaper than drinking water.

Ms SYLVIA HALE: Earlier you were talking about user pays versus fixed costs. I certainly can appreciate that the user-pays system has an inbuilt demand management component, but I am concerned with the fixed costs that there are great demands on Sydney Water in terms of maintenance of its infrastructure, let alone introduction of more equipment to better use, or make use of, its resources. Do you think that is the only way to resolve this significant increase in Sydney Water prices, both in the user-pays component as well as in the fixed-charge component?

Mr MARTIN: When I say there needs to be a reduction in fixed charges and an increasing reliance on usage charges that does not necessarily assume that you would increase the cost to

consumers. For instance, the current changes to prices under the IPART recommendations virtually sought to be revenue neutral, so the reduction in fixed charges would be offset by the increase in usage charges. I think it is inevitable that as there will be more infrastructure developed in the coming years there will be an increase in the price that customers pay. To a large extent that is unavoidable. The question then becomes how you recover those costs. My contention is that it is more sustainable to rely on usage charges as opposed to fixed charges. But in doing that there careful attention needs to be paid to vulnerable customers. Measures introduced in the current pricing reforms protect vulnerable customers from the impact of price increases. That certainly should be considered at all times. But I do not believe that the protection of vulnerable customers is insurmountable. Mechanisms are already in place to address those issues and they can continue to be employed in the future.

CHAIR: Are you talking about structures on fixed charges or in the metering situations?

Mr MARTIN: A range of measures is available to protect vulnerable customers. One is the provision of low-interest loans for introducing more water-efficient appliances into their houses. Another one that I think needs to be given a lot more attention is the concept of Sydney Water simply providing free audits to vulnerable customers on how they can reduce their water usage. That offers the benefit to them of reducing their costs and also the benefit to the community of helping reduce consumption. It is incumbent on Sydney Water and the metropolitan water agencies in general, to the extent they can, to assist customers to reduce their water usage. That service should be provided to vulnerable customers.

CHAIR: I got the impression that you felt that Sydney Water had an interest in maintaining fixed charges and that consumption charges were so small that it was going to be difficult to encourage people to use less on those grounds. Sydney Water is getting proportionately more from fixed charge rates on flats and units and there has been a campaign to have the flats and units individually metered. Is there a workable way through that issue? Is there a potential for significant gains or are we wasting our time?

Mr MARTIN: There are certainly opportunities to move multiple dwelling buildings to individual metering. Until that is done there will not be much incentive for the occupants of the dwellings to reduce their water usage. I am not sure to what extent it can be done in the short term but it needs to be done over time. As I said earlier, I understand the resistance of Sydney Water because it increases revenue volatility but measures are available that have been considered by IPART as to how to address that. If Sydney Water sells significantly less water than was forecast when the prices were set it may be rewarded in the next round of pricing reviews by having an adjustment allowing it to recoup revenue. Equally, if it sold more water and raised more revenue than was forecast, the next round of pricing determinations could reflect that by imposing a penalty. There are measures to address revenue volatility, it just requires a degree of boldness from the tribunal and from government and a willingness to embrace innovation.

CHAIR: What findings or recommendations would you like to see the Committee make as a result of this inquiry? What do you see as the primary issues?

Mr MARTIN: As I mentioned in my opening remarks, a significant emphasis and investment in recycling and increased emphasis on demand management. Permanent water restrictions are an essential component of sustainable urban water cycle management. Ongoing pricing reforms are also needed. As I said, the reforms that have been introduced to pricing are an excellent start but they are by no means the final point that we will need to reach in pricing reforms.

CHAIR: We have heard about subsidies and support in relation to fittings, demand management positive support. Given that flushing toilets represent between 25 and 30 per cent of household and water use, has your organisation looked at the opportunities? I know that there are waterless urinals and, dare I say, composting toilets. Apart from subsidies for these things, are there any innovative measures you would suggest? Also, do you have any suggestions about viable decentralised and labour-intensive industries that might support this drive?

Mr MARTIN: I cannot give you a detailed evaluation of one particular technology over another—there are probably people in the relevant industries who could do that—but it is certainly true that there are a range of approaches out there. Perhaps one of the things I should have mentioned

is that one of the effects of having a wholesale step price that would penalise Sydney Water for failing to meet its demand management targets might be that Sydney Water would be much more willing to invest in innovative approaches to demand management because it would perhaps make more economic sense for it to invest in demand management in innovation than it would for it simply to incur the penalty in the wholesale step price.

(The witness withdrew)

KELLY ANN KNOWLES, Councillor, Sutherland Shire Council, P. O. Box 17, Sutherland, and

IAN NOLAN DRINNAN, Principal Environmental Scientist, Sutherland Shire Council, Locked Bag 17, Sutherland, sworn and examined:

CHAIR: In what capacity are you appearing before the committee? Are you appearing as an individual, or as a representative of an organisation?

Ms KNOWLES: As a representative of an organisation, Sutherland Shire Council.

CHAIR: Are you conversant with the terms of reference of this inquiry

Ms KNOWLES: Yes, I am.

CHAIR: Ms Knowles, if you should consider at any stage that certain evidence you wish to give or documents you may wish to tender should be heard or seen only by the Committee, please indicate the fact and the Committee will consider your request.

Ms KNOWLES: Thank you.

CHAIR: Mr Drinnan, in what capacity are you appearing before the Committee—as an individual, or as a representative of an organisation?

Mr DRINNAN: I appear as the principal environmental scientist for the Sutherland Shire Council.

CHAIR: Are you conversant with the terms of reference of this inquiry?

Mr DRINNAN: Yes, I am.

CHAIR: Similarly, if you should consider at any stage that certain evidence you may wish to give or documents you may wish to tender should be heard of seen only by the committee, please indicate that fact and the committee will consider your request.

Mr DRINNAN: Thank you.

CHAIR: Before there is questioning from the committee, if either of you, or both, would like to make a statement in support of what you have already submitted, or anything at all, please feel free to go ahead at this point.

Ms KNOWLES: Thank you. Sutherland Shire Council is a leading council in terms of water conservation, water quality management and water sensitive urban design. However, this afternoon, in terms of my statement, I want to focus on the primary issue in which council chose to put submissions before this Committee, and that is the issue of the desalination plant which is the subject of a proposal for it to be situated at Kurnell, which is in our local government area. These concerns that Sutherland Shire Council has continue long after the Government's announcement to shelve the desalination plant proposal. Indeed in our view we have concerns about desalination being a costly, energy intensive, environmentally damaging proposal, not only for our area but also for the metropolitan area and broader New South Wales.

In terms of the nature of those statements and our concerns, we have concerns about the impact of the proposal in terms of greenhouse gas emissions, the flora and fauna of Kurnell Peninsula, the indigenous heritage, as well as perhaps what could be described the Anglo heritage of Kurnell Peninsula, the water quality around significant areas, including the beaches, including the Ramsar protected town of Towra Point, as well as aquatic ecology and site management. On Kurnell it appears as if the proposal put by the State Government has been assessed in what I call a vacuum; that is, assessment has only been based on the site itself but not the surrounding area that will be equally affected by this proposal.

As well as that, we see that any cost benefit analysis should include the cost of the development, including the construction, the operation maintenance, the loss of marine habitat, including significant whale migration that occurs at or around that peninsula, and the exacerbation of global warming as a result of the greenhouse gas emissions. As well as that, we see out of the environmental assessment process around this proposal, a lack of detail. Quite frankly, there has not been enough testing. There has not been enough assessment of the likely impact of the desalination plant to Kurnell Peninsula and elsewhere in New South Wales.

We have been dissatisfied with the amount of critical inspection through an environmental assessment and therefore, through that, a lack of guarantees in terms of protecting the environment as a result of this desalination plant. This has created some difficulties for us in terms not only the process and providing submissions to not only this parliamentary inquiry but as part of the approval process of a desalination plant proposal. In fact I think as well as that we have had insignificant amounts of consultation in the immediate area with the residents of Kurnell but also in the broader community. We saw what I think is a manufactured consultation process where we were forced to see a Pepsi-style taste testing as a form of consultation—asking people to taste desalinated water, when the issues have never been about desalination in terms of what the water tastes like, but about the environmental impacts and cost benefits.

As well as that we saw three meetings at Marrickville, Rockdale and at Sutherland, or actually broadly we would call at Cronulla, that were controlled, at the least. That is probably the most conservative statement to make about the nature of that consultative process. As well as that, if we look at the environmental assessment and the lack of detail, not only was Sutherland council as the local area council given no opportunity to review the assessment process before it went to public consultation—indeed we have a lot of information about the Kurnell Peninsula and the environmental heritage that we have on that peninsula—but also the lack of consultation in the future continues, even though the State Government has shelved the desalination plant proposal. Continuing on that peninsula is $120 million, which is money to purchase two sites to continue a pilot plant and to provide compensation to two consortiums as a result of the announcement of the shelving. So we still have a pilot plant out there.

Unfortunately, though, no matter what assessment and testing occurs for that pilot plant, Sutherland council at this point in time has no access to any of the results of that testing. There are quite a number of outstanding issues, including delivery routes, including the nature of the impact upon the marine environment, the nature of the toxic and highly intensive salt plumes that will come out of any potential plant on that peninsula and impact upon marine ecology, such as the sea grasses there, and the reef area as well as whale migration. We will not have access to that information. To me, that is not in the spirit of the environmental legislation that New South Wales abides by and we have an ongoing concern about the nature of calling such a proposal, being a desalination plant, critical infrastructure going forward, given the shelving of the plant.

In terms of this inquiry and why we seek to be before you this afternoon, we would like to see this inquiry firmly establish a desalination plant to be an expensive, unreasonable, unsustainable option for Sydney Water to continue to seek in the future. We would also wish and seek the support of this inquiry to find answers to some of the questions we have for the Department of Planning and for Sydney Water going forward.

Mr DRINNAN: I have prepared a presentation but we may not get around to it. The presentation specifically dealt with the main areas of concerns of council particularly in relation to the two initial terms of reference of this Committee, the impacts of the desalination plant and the assessment process associated with the desalination plant, specifically addressing I suppose the lack of detail to inform the assessment process and deficiencies in the assessment process. Part of that presentation contained a request from council to request the inquiry to require further information from other parties who have appeared before the inquiry to better inform the decision-making process and to better inform the community in writing about those types of issues. The presentation takes about 15 or 20 minutes. Being mindful of the time, I have copies of the presentation here and I am quite happy to tender it to the Committee to be considered at leisure.

CHAIR: I think, with agreement from the Committee's members, we would be better off if you tender that in printed form. We will undertake to read all that material, but given the limited time

we have now, which is virtually just a half hour remaining, if you would like to say anything further in terms of a statement, that would be welcomed, rather than doing the presentation now, which I think would take too long. If everyone is comfortable with that, in think the Committee would probably find the time better spent questioning you.

Mr DRINNAN: Yes. I am quite happy to go down that track.

CHAIR: Do you have any other statement to make before questions proceed?

Mr DRINNAN: Councillor Knowles covered the majority of council's concerns and the majority of the issues I would have addressed. The presentation contained specific reference to questions or issues that we would like the committee to raise with other parties appearing before it. There are specific in relation to outstanding issues for Sydney Water, the Department of Environment and Conservation and the consultation process that has been undertaken about the adequacy of the environmental assessment. It contains specific areas we would wish the committee to address or raise with other parties who appear.

CHAIR: In terms of those consultation processes, are you referring to the public meetings that were held, or were there other issues that you as a council, as an affected organisation, had in the overall processes in the lead-up to the desalination plant?

Mr DRINNAN: I will address the areas of concern that I have. The director-general had specific requirements for the environmental assessment associated with the desalination plant. In the director-general's covering letter contained a requirement that the Department of Infrastructure, Planning and Natural Resources consult with relevant agencies—the Department of Environment and Conservation and the Department of Primary Industries—as to the adequacy of the environmental assessment prior to its public exhibition. I am not sure exactly when the environmental assessment was lodged with the department, but the director-general's requirements were issued on 18 November and the environmental assessment was released on public exhibition on 24 November. That is a total of six days for which it to be amended in accordance with the director-general's requirements, to be lodged with the department and then for the department to consult with those other agencies as to the adequacy of the document.

We made some inquiries under freedom of information with the Department of Environment and Conservation and the Department of Primary Industries, notably the New South Wales Fisheries, which indicated that the Department of Environment and Conservation indicated that it had receive some consultation, but it had notified the department that the timeframe was insufficient for it to undertake the required review and that the Department of Primary Industries and Fisheries had not received any consultations or notification. That is the issue I would like covered in relation to the consultation. There are other director-general's requirements that specifically stated that appropriate consultation must be undertaken with Sutherland Shire Council and the local community. They go to some of the issues that Councillor Knowles addressed earlier in her opening statement.

CHAIR: The Kurnell peninsula area is very heavily industrialised with significant petrochemical industries. I know that in the past there has been quite some release through pipes in that area of industrial effluent running out to sea. Does your council have any say in that, or are you aware of trade waste agreements and the sorts of materials that can be piped directly into the ocean there? What sorts of pollutants are we dealing with? I am thinking in terms of its already being a polluted area on the one hand, but if there were a desalination plant, what would be the limit, or would there be a possibility of actually taking in some heavy industrial chemicals and solvents from other outfalls in that area?

Mr DRINNAN: The discharges in the area are licensed by the EPA section of the New South Wales Department of Environment and Conservation. Council gets to comment on those discharges when major changes are proposed as part development applications on those sites. An application has been lodged for a major upgrade at the Caltex oil refinery. Council has taken that opportunity to provide comments in relation to discharges and this may provide an opportunity to change some of the limits on those discharges. Caltex has some onsite treatment facilities to remove hydrocarbons and so on, which are the major sources of contaminants. The other major discharge in the area is the Cronulla sewage treatments plant. In 2002, that underwent a significant upgrade and it

now discharges tertiary treated effluent and disinfected effluent. So the quality of water coming out of that area is quite high now. Although we have no regulatory role in terms the discharge from those areas, we do have a water monitoring program. We have beach watch programs to monitor water quality on our beaches and we have noticed a significant improvement since the upgrade of the Cronulla sewage treatment plant. There has been a dramatic improvement in water quality in that area in the past five years.

CHAIR: Councillor Knowles, I think you mentioned delivery routes regarding the desalination plan. What do you understand of the infrastructure that would be required? What sort of territory does it traverse? Will it have an impact on surface, vegetation, urban development and so on, or is it a subterranean activity?

Ms KNOWLES: In terms of delivery routes, my comment was broadly describing not only the tunnelling that is prescribed. As I said, the environmental assessment seems to provide for the site and analyses the site in a vacuum. There is very little acknowledgement of the pipelines that go in and out of that site. Both of those pipelines are potentially tunnelled underneath indigenous heritage listed areas and a national park. In addition, the outfall will be around Rocky Reef, and that has the potential to damage the marine ecology. There is limited information and environmental assessment about site management and the amount of spoil coming out and the amount of backfill required in the pilot plant. We are talking in layman's terms about one road in and one road out on the Kurnell peninsula. We have no knowledge of what that will do to traffic and site management. Given the Caltex oil refinery and a number of other industrial uses on parts of the peninsula, we do not know what that will do to the safety of the residents of Kurnell.

In addition, until very recently we were left in the dark about what the pipeline would look like across Botany Bay, where it was going to be, whether it would affect seagrasses and Botany Bay itself, and whether it required any movement of some of the most toxic sediment on the bottom of Botany Bay. I should add that this information has been gathered by the council; it was not explicitly given to us via the environmental assessment. There has been very limited testing of the marine ecology—the flora and fauna—on the peninsula. Some of them are threatened species. It is only because of the work of the council, not of Sydney Water, that we have that knowledge. It was not the result of Sydney Water's making an application to the Department of Infrastructure, Planning and Natural Resources.

The Hon. RICK COLLESS: Councillor Knowles, in your submission you make mention of the salt plumes coming out of the proposed desalination plant. What impact do they have on the local ecology? How far do they extend and how concentrated are they? What impact will they have on the marine environment?

Ms KNOWLES: I am not across the specifics; that is Mr Drinnan's game. Broadly speaking, in terms of the mixing area, I understand that there is very little information. That is at the outfall pipe and around the intake pipe. It is around Rocky Reef, which has significant impacts on things like blue gropers. I am a scuba diver in my free time. That has a particular impact in terms of the lack of assessment of that area. There is no detail. There is also a lack of understanding about the dispersal models; that is, the toxic plume dispersing into the broader area. About 1,400 whales swim past the peninsula. In fact, we have to close the national park at times because of the number of people in that area watching the whale migration.

That happens between June and September each year, interestingly, around the time when the pilot plant will be up and running, as I understand it. Also there is no knowledge of the impact of increased salinity in that area. Anecdotal evidence, from whale watchers who regularly go there to gather data, is that when drilling is conducted on the peninsula the whales push further out to sea. As a result, we would have concerns although there is no solid, scientific evidence about the salinity and the discharge of the chemicals that would have an impact upon that species. It is a joy to see the whale migration along that peninsula. It tells us something about the quality of water in that area when whales come so close to the coast.

Apart from that there is no knowledge of the plankton communities that will be affected, including from some of the pipelines that run through Botany Bay. There was a view by Sydney Water that it was able to restore some of the sea grasses. We have already seen, following the

construction of the airport's second runway, the lack of success of renewing seagrasses. Seagrasses are integral to the marine ecology, to fish life in the area, not to mention some of the commercial fishing in that area including oyster farming. There is also concern about the impact on the oyster industry, which is now a dying industry in the area. There has been serious infection in a lot of the oyster farming in the area, and there is only one major lease left. And they have also expressed concern that it will have an impact upon the business.

Mr DRINNAN: The Sydney Water environmental assessment acknowledged that its dispersion modelling has not been calibrated or validated as yet. They have run the models but they do not have the data to feed into the model to check whether the results are correct. That is something they have acknowledged that they meant to do.

The Hon. PATRICIA FORSYTHE: Is there a time on when that will be done?

Mr DRINNAN: No, it is not stated in the environmental assessment. It is something that we were hoping that this hearing would inquire of from Sydney Water. As Councillor Knowles noted, Sydney Water does not have an understanding of the micro-fauna and the invertebrate communities in the area. It has acknowledged that it needs to undertake those studies. Sydney Water acknowledged also that it does not understand the toxicity impacts and salinity impacts on the local community and that it will need to undertake specific scientific studies when it collects local fauna, expose them to varying salinity concentrations in order to determine the impact.

The Hon. RICK COLLESS: The Committee has heard a lot today about stormwater harvesting. What is the council's opinion on stormwater harvesting? How do you see it impacting on council's operations?

Mr DRINNAN: Council is looking at a range of options for water conservation, and stormwater harvesting is one. Council is a significant water user for watering playing fields and that type of thing. We are looking at a range of options and stormwater harvesting for irrigation of golf courses and playing fields is a practical measure as far as we are concerned because it does not require potable water to do that. We are looking also at more options, one of which is progressing to the design phase and that is accessing tertiary treated effluent from the Cronulla Sewage Treatment Plant. We have looked at changes to irrigation practices to reduce reliance on water.

We are looking at stormwater harvesting for those water uses that do not require high-quality water, do not require potable water, in conjunction with a range of other practices such as recycled water usage and change of water practices. We have decided that a little bit of browning-off on some playing fields is acceptable, because it results in reduced water consumption and the community has come to accept that as well. It is part of the complete package.

The Hon. RICK COLLESS: Today the Committee heard also from Sydney Services Pty Ltd. No doubt you are aware of the project it is embarking upon.

Ms KNOWLES: Yes.

The Hon. RICK COLLESS: What do you see might impact on your council if that project were to go ahead? Do you support the concept or do you have some concerns about it?

Mr DRINNAN: I suppose the fact that we are currently using recycled tertiary treated sewage effluent indicates that council is prepared to look at and examine options. We have gone down the feasibility study in terms of reuse of tertiary treated effluent and decided that for irrigation of golf courses it is an acceptable solution. We have now gone beyond the feasibility phase to the design phase. Council supports options that implement recycling of sewage effluent. Council did have a presentation from Services Sydney, and that was well received by council.

Ms KNOWLES: In extension to that, in terms of using the water that comes out of the sewage treatment plant [STP] at Cronulla, council has gone to the next step by actually seeking funding from the Federal and State governments to support proposals to use some of that water. A number of years ago, in fact when the tertiary treatment plant was opened, the then Deputy Premier, Andrew Refshauge, went to Kurnell and drank a glass of water from that STP, and said "This is the

future of water". Thankfully at this time the Federal Government has been supportive, although we are yet to see the almighty dollar. The State Government has not been interested in finding funding for our proposal.

The Hon. RICK COLLESS: I turn now to the desalination plant proposal. I notice from your submission that you are opposed to the desalination plant. Since the Government has shelved the 500 kilolitre per day plant in favour of the 125 megalitre a day plant, should the critical infrastructure classification on the pilot plant be abolished? Should that environmental impact statement process be gone through before the 125-megalitre plant goes ahead?

Ms KNOWLES: The short answer is yes. We would love to see an environmental impact study done because that would give a solid guarantee about not only that peninsula but also about dealing with greenhouse gas emissions. At the same time our view is that following the announcement of and finding of aquifers, that this is no longer the primary method by which to solve what is in theory Sydney's water crisis. Therefore, it is no longer critical and does not fall under that component of the Environmental Planning and Assessment Act. We would want to see it fall back into the normal regime of planning proposals. We would like a full impact study to be done.

The Hon. PATRICIA FORSYTHE: My question is not strictly part of the terms of reference, but I think is relevant. For a number of years there has been criticism of Sydney Water over the maintenance of some of its infrastructure that is in your council area. I refer to the Woronora pipeline. In recent years has Sydney Water spent money on fixing the significant leaks that have been identified. Do you know what has been done?

Mr DRINNAN: Yes, Sydney Water has a leak prevention program. That program has been operational on the Woronora pipeline and there have been some considerable savings in water loss due to the repair work and maintenance done on that pipeline.

CHAIR: What is the distance of pipeline? Over how many years has it been leaking? It is of interest to members of this Committee and certainly myself to know the size of the task and how effective Sydney Water has been in dealing with the substantial leaks throughout the whole of the system.

Mr DRINNAN: I am not the best-placed person to answer that. I estimate that we have approximately 30 kilometres of pipeline from the dam to some of the major distribution networks. I am not sure of the frequency of maintenance along that pipeline. I know some repair work has been done because I walk along that area and ride my bike along the area. Some areas that were previously leaking have now been repaired.

CHAIR: Maybe I should ask Sydney Water this question, but does your council have any record of response time to leaking pipes? Or would you like to take that on notice?

Mr DRINNAN: We have within council what we call our customer request management system where our calls to council are logged, and where those calls come in they are referred to Sydney Water. If residents notify us of leakages we pass those requests on to Sydney Water and we usually have a very quick turnaround time; we have a very good working relationship with them in terms of the repair of leaks. Those repairs are not carried out by council, but we do pass on those requests when they come to council through an understanding we have with Sydney Water.

Ms SYLVIA HALE: Just following up on that. As someone who has watched for about four or five months two leaks in the street outside her house, I am not so sure that Sydney Water has been as expeditious as it might be. But have you ever calculated the cost to council of the undermining of road structures and those ancillary costs that would be associated with failing to attend to leaks?

Mr DRINNAN: They are not costs I would have off the top of my head, but they are costs that would be available through repairs that council has done.

Ms SYLVIA HALE: But they would be costs that council would have to bear, would they not?

Mr DRINNAN: Yes. Sometimes the leaks are quite significant and sometimes the damage is quite significant as well, yes.

Ms SYLVIA HALE: I suppose it would be fair to say that the desalination plant and the declaring of critical infrastructure was the first major test of how the amendments and the introduction of part 3A to the Environmental Planning and Assessment Act were working out. What is your assessment of the processes there now the Minister has enabled it to be put in train in terms of community consultation and whatever?

Ms KNOWLES: Theoretically, the nature of introducing part 3A has merit in terms of ensuring that key pieces of infrastructure in New South Wales get up and running, particularly from an economic point of view, from service to the average resident or average constituent. However, when the Minister discussed part 3A on the floor of this very Parliament, he talked about some of the principles, and those principles included the importance to industry and the importance to residents of New South Wales, but it was also balanced against environmental principles and balanced against key community interests, and I think that balance has been lost in how critical infrastructure has been dealt with for the desalination plant and used as the prototype.

What the Minister said was supposed to occur under 3A has not occurred, and in that respect I think we should go back to the theory and reassess what critical infrastructure is supposed to do. Unfortunately, there are two other projects that are sitting there considered as critical infrastructure that are yet to be put through this process. I fear for those communities who have to go through the lack of consultation. We have put in a series of FOIs; we have put in a series of complaints to the ICAC about the nature of this proposal and have got nowhere. I think that is indicative of a government that feels as if they can use critical infrastructure to push things through. They value the merit of critical infrastructure in terms of putting through infrastructure in New South Wales, however, there are limits to it in terms of communities having their say.

Ms SYLVIA HALE: You say there are two other projects. Will either of those projects have an impact upon Sutherland shire?

Ms KNOWLES: No. Some would say thankfully not. A desalination plant has been the burden of Sutherland Shire Council for, some would say—July last year was the first point in time when the Premier at that point was in Dubai and made the announcement. Can I say, that was the first point in time we found out.

Ms SYLVIA HALE: You mentioned that even pursuing the pilot plant project is going to involve costs in the vicinity of $1.2 million of land and then the actual buildings themselves and the compensation. What is the expectation with the pilot plant, so far as you know? That it will be constructed to perform a series of experiments and then will shut down, or are you unaware of its long-term future?

Ms KNOWLES: From community members who have formed part of council's working party, who have set foot on that site and have monitored this issue, we are aware that there is a plant in operation—whether it is considered to be the pilot plant is another question, and I will get to that in a moment. There is an intake pipe that is at the exact spot and already drilling that has occurred underneath the national park has what appears to be some structures up and running using the STP for the outfall. We understand from that that there is testing being done around what a desalination plant would do in that peninsula and some of the environmental effects.

Insofar as there being a pilot plant up and running, Sutherland council is in the dark about what that pilot plant will be. We know as much as the media knows and we have, unfortunately, been in the position where Sydney Water has been very reluctant to tell us the goings-on of that site. In fact, we would invite this inquiry to ask Sydney Water what the future of that pilot plant will be and whether that testing would become available to not only this Parliament but also to Sutherland council and the various community groups who have an interest in this, not to mention our local environment centre who equally would be interested in knowing some of the detail around a pilot plant. The short of it is: we are in the dark.

Ms SYLVIA HALE: So you have formally requested Sydney Water to provide you that information and they have refused?

Ms KNOWLES: At this point in time staff at Sutherland council have made requests about this information. We have now formally followed that up, as of a number of nights ago, where our working party met to have Sydney Water come down to see us and have the Department of Planning come to our council as well to provide us with further information, and hopefully that invitation will be taken up. That being said, I must say invitations have not been taken up in the past, and when they have we have been faced with staff who have been doing their job, can I say, from Sydney Water, but have been unwilling to give us any detailed information.

Ms SYLVIA HALE: Has the council formally written to the Minister for Planning requesting that the pilot plant be no longer deemed to be critical infrastructure?

Ms KNOWLES: At this point in time we have written, I understand, to the director general to inquire about the nature of the process after the announcement of the shelving of the plant. We have, in the last couple of days, sought a hearing from the Minister for Planning to find out what his point of view is on the approval of this process. When the plant's proposal was in the hands of Minister Scully at the time of the announcement of the shelving, we were equally told that the plant was going to be powered through 100 per cent green power. Why I say this is because we equally want to know from Minister Sartor, given that is a significant change to the proposal, whether that is going to affect his approval process and whether we have to go back to the drawing board, or whether Sydney Water is going to go back to the drawing board.

They are questions we need to know the answers to. That being said, can I say, given Minister Sartor was the proponent of this proposal originally in July of last year, we do not know whether we are going to get a fair hearing from the Minister now that he is the approver of that process. We have a question mark over the level of bias when the same Minister who was the proponent is now the approver.

Ms SYLVIA HALE: So you would have considerable concerns about the transparency and accountability of the entire process?

Ms KNOWLES: Not only from the approval process point of view but also from the tenderer's point of view. Hence, why we put in a letter, and I understand that is part of our written submission to this inquiry, that the tender process have some probity and transparency to it. When we originally put in our FOI we were told that they were Cabinet in-confidence documents and commercially confidential. We do note though that through this inquiry a number of boxes were released and we were able to access some of the information, but not all of it. As a result, we have also had queries about the nature of the consortiums. One particular consortium had one of the parties pull out and they wished to provide another party. They were told no, they would have to withdraw from the tender process.

The two parties that are left have the same parent company. So therefore, we would argue that there are only Chinese walls between those two tender processes and whether New South Wales taxpayers will have the dollar value attached to any desalination plant in the future.

Ms SYLVIA HALE: Have you been given any information about the compensation that is payable to the tenderers?

Ms KNOWLES: Through the media I have heard something to the tune of $10 million, but that is only through the media.

CHAIR: I refer to an issue that was raised earlier in discussion. When you were referring to the existing pilot plant did I understand you to state, first, that it is operational and, second, that it is exhausting its saline plume through the existing Potters Point ocean outfall? Did I understand you correctly?

Mr DRINNAN: Yes, that is correct.

CHAIR: If that is correct, one of the issues that has been raised by your council and by many others relates to the impact of a saline effluent on the receiving environment. It has been said that that would not be able to be studied because it would be mixed with a significant amount of effluent from other sources—sources coming out of Potters Point. So what is the point of that?

Mr DRINNAN: I think it was a cost-saving measure. The pilot plant is in close proximity to the pipe that goes to the outfall.

CHAIR: But is not one of the issues of a pilot plant or a desalination plant the impact of super saline water on the receiving environment?

Mr DRINNAN: That is correct, yes. The pilot plant is meant to inform the design and the issues associated with the major plant. At the moment they do not have an understanding of the quality of the water that exists in the area of the intake, nor do they have an understanding of the pre-treatment measures that they need to go through prior to putting it through the membranes. There is no certainty about the chemicals that are used either. Those are some of the deficiencies that we have highlighted within the environmental assessment process. The pilot plant is supposed to inform the design and address some of those deficiencies once that information becomes available. But that is a glaring omission and something that is not able to be assessed as part of the pilot project.

CHAIR: Thank you for your input to this inquiry. It has certainly been helpful to our deliberations. If any further questions arise whilst we are deliberating we might come back to you. Thank you very much for your attendance here today.

Ms KNOWLES: Thank you, Chair. We appreciated being able to appear before you.

(**Short adjournment**)

ROYA SHEIKHOLESLAMI, Scientist, academic and university teacher, 609/168 Kent Street, Sydney, sworn and examined:

CHAIR: In what capacity are you appearing before the Committee today—as an individual or as a representative of an organisation?

Professor SHEIKHOLESLAMI: I think I was sent an invitation to appear in my capacity as President of the Australasian Desalination Association. That is a voluntary position. The reason I am here is that I was sent an invitation. Otherwise, I have been working on desalination. I am a scientist who has been working in that area for over 25 years. I would rather be here as a scientist and as an academic representing my views.

CHAIR: Are you conversant with the terms of reference of this inquiry?

Professor SHEIKHOLESLAMI: Yes, they were sent to me.

CHAIR: Before we commence asking questions in this matter would you like to make an opening statement? Is there anything you think is relevant to the Committee at this point?

Professor SHEIKHOLESLAMI: Just the whole fact that, even though I received an invitation as President of the Australian Desalination Association, I am on oath and I have sworn, so I am here just as a scientist and academic who has worked in this area for a long time. I understand the reason I am here is simply to discuss the seawater desalination plants, as far as I understand—if I understand it correctly.

CHAIR: Yes. That is a fair call. It really is looking at both the pilot plant and the projected desalination plant here in Sydney, the pros, perhaps, from your perspective, but you may wish to use other examples in your experience. I think the most important focus is how appropriate this particular technology is—cost and benefit—to New South Wales.

Professor SHEIKHOLESLAMI: Is that a question that you are asking?

CHAIR: No. That is merely my welcome and introduction for you to say what you like for a moment and then we will move on to questions.

Professor SHEIKHOLESLAMI: Okay. I will be addressing specifically seawater desalination, because that is what I understand is your concern. Just to make sure, for the Committee to have an appreciation that there are other types of desalination. It is not only seawater desalination; there is desalination of other types of saline water as well. Desalination in general is separation of salt from water. It can be any sort saline water and the salinity can be at any level—lower level from the bore water all the way to the seawater.

I am making this statement because usually when you are listening to the media, people try to compare desalination and reuse. In some cases desalination can be reuse because it is desalination of bore water or of industrial waste water. I am just making that distinction to make it clear that here they are just talking about the seawater desalination plant, the one that they were planning to have for Sydney. From my understanding of the whole industry and my understanding of the water quality and quantity in Sydney and New South Wales, there has been no doubt in my mind that there certainly is a need to have a seawater desalination plant. There was a need in my mind for a long while, way before even Sydney decided to embark on it.

However, from the moment that it was announced what size of desalination plant they were looking at, that always brought a question in my mind that it was not the appropriate size. That was the initial capacity, when they initially suggested that. Again for the record, I want to make sure it is clear that in no way am I financially involved with Sydney Water, either. For some reason, I do not know for whatever reason, fortunately they decided to reduce the size of the desalination plant. Originally they had suggested 500 megalitres per day. That was one third of the Sydney capacity. However, 500 megalitres per day is bigger than the biggest desalination plant, which is not even in operation completely, which is the Ashkelon one.

From my point of view it was a very slow move, but when they moved they jumped. So that was my impression from the technical and scientific point of view about the size of the desalination plant that they were considering. Then there were a couple of issues about the operation of the desalination plant that they were considering, to have it intermittently to satisfy the needs. Again, from an individual's point of view who has worked in the area for almost 25 years, there are some impractical issues in that, which should be refined.

The whole idea of having a seawater desalination plant is a necessity. There is no doubt of it. Seawater desalination is not a replacement for reuse of water. Reuse is when you have the water. Seawater desalination is when you do not have the water. So there is a 100 per cent requirement and need in a climate like Australia, in Sydney, with this level of annual rainwater that they would need a seawater desalination plant. There is a need for that. However, it should be sized, designed and operated properly. Maybe they jumped into it in a big leap because it had never been done before in Australia so they did not have much background contact all information or experience of that.

I understand that from a public point of view there is a great degree of doubt and concern about what they call discharge. That is one of the biggest doubts held by the public—they always talk about discharge of chemicals or endangering marine life. Australia is a very new player in this but seawater desalination has existed for years. Seawater desalination is the only method by which nature provides us with water. Nature desalinates the seawater and provides rainwater. We have to learn to do it correctly.

There are many seawater desalination plants in operation throughout the world. Of course, originally there were thermal desalination plants. There are still lots of uses for thermal desalination plants especially when people are trying to collocate power plants and seawater desalination plants. Power plants are not more than 60 per cent efficient, so when power and water are collocated, this waste energy is used to produce water. This relates not only to thermal plants. What they do these days is to combine a power plant, for example, with a thermal plant and a membrane plant. They call it hybridisation. They try to take advantage of this waste energy first of all. It is not that they try to produce greenhouse gases. That is one type of desalination plant, which is in use all over the world: power and water plants are collocated. That is one option for a seawater desalination plant.

There is a misconception that if there is a need for water but no need to put a power plant with it, a lot of energy is used for the seawater desalination plant and there is a chemical concentrate discharge. With membrane units and the current available technology, the total energy consumption for seawater desalination is not, if you consider all the energy involved in water re-use—I am not against water re-use, please do not conclude that. Water re-use is when you have water and re-use it. Seawater desalination is for when you do not have the water and you have to produce it. If you re-use water, of course you need to desalinate less water. However it is not going to be subsidising it. At the moment energy consumption is going down towards one kilowatt per cubic metre—at the moment it is 1.8—and certainly it is being sold and traded all over the world.

From the public point of view there are those two points of concern. The second is the concentrate discharge. There have been various studies on concentrate discharge, including a study by Western Australia. In addition a couple of studies have been published, one in May in the European *Desalination* journal, which indicates that a historical section in Spain has been conducting experiments and monitoring discharge for years—because they are living on seawater desalination in Spain—to make sure the concentrate discharge is not going to damage estuaries and marine life. There has been no detectable effect. There are studies that show swimming causes more interference, not damage, to marine life than seawater discharge. Seawater desalination discharge is a maximum of 50 per cent concentrate. There are many ways to reduce that from 50 per cent, just by different pumping, pumping more water, or diluting it and sending it back to the ocean. Even if you do not do any of that, it is just twice as concentrated. It is not really a chemical concentrate. People have an idea in their mind it is a chemical. I am trying to say that people have lots of ideas because of misinformation. There is a little need to increase the level of information and education so people have an appreciation that it is not something that is created.

Thermal desalination has been used for years and seawater desalination plants have been used for at least 30 or 40 years. It started at the end of 1979. It is not something new and there is lots

of energy saving equipment, which has alleviated all those issues. I always say it is being used every day in the most developed part of the world, the United States, and in the least developed parts of the world, Africa and the Middle East, as a source of water. It is not to replace water re-use, conservation of water, better infrastructure or better catchments. It is the source of water when all those things have been done and still you do not have water.

CHAIR: Thank you. You have certainly raised a few issues. I appreciate what you are saying about hybridisation, when you have a power plant and there is the energy and the water effluent and it can be collocated. You are saying that currently desalination takes about 1.8 kilowatts per cubic metres in electricity consumption. I do not have the figures off the top of my head for the cost of production of water by other means. That still is very high electricity consumption for the production of water per gigalitre,

Professor SHEIKHOLESLAMI: If you put together the energy consumption in water re-use for the actual membrane plant, for the activated sludge part and for the oxidation part after that, then the energy usage will be higher than that. That is what they call life cycle analysis. I teach chemical engineering economics at university. When you are costing a plant, you have to cost everything. You cannot compare apples with oranges. If you compare apples with apples and take into account the whole cost from the front end to the discharge end, you will see. Another misconception is that people think—again, please do not take it the wrong way, I have been working on re-use myself for almost 15 years—if you re-use water there is no discharge. There is, and the quality of the discharge water is very poor and it has to go into the ocean too. One way people deal with it is to dilute it with rainwater or stormwater and then send it into the ocean.

CHAIR: Is that not a case where biosolids are removed and re-used? They can be trucked in a relatively dry state. It does not actually have to go into the ocean. There are other methods of disposal of those products and sometimes re-use of those biosolids, given the Australian environment.

Professor SHEIKHOLESLAMI: You are discussing what we call "zero liquid discharge". So, in reality, in the end there will be no liquid discharge. The price of the zero liquid discharge equipment can be eight, nine or 10 times more than the equipment that does not have zero liquid discharge. Zero liquid discharge is not always feasible. I used to work for Atomic Energy of Canada Limited and we patented the first zero liquid discharge equipment. We used it for the discharge of nuclear wastewater—it cannot be discharged; you had to make it solid. There is no way around it so you have to pay for it. If you are working inland and you do not have any means of discharging water you have to tolerate the costs. For day-to-day practices zero liquid discharge is possible but economically prohibitive.

CHAIR: You mentioned in your statement that you see desalination as a choice of last resort when there is a specific necessity to provide a certain amount of water resources in the community. Sydney's average rainfall is about twice that of London. London is a much bigger city yet it does not use desalination but manages with recycling. It has a much larger population. Why are you so convinced that Sydney has reached the point where there is a definitive need for an emergency recourse to desalination?

Professor SHEIKHOLESLAMI: I do not like emergencies. As a chemical engineer, I like things to be planned in advance and applied properly. I do not like somebody to jump into things. I do not do that as an engineer. As I said initially about the Sydney desalination plant, they did not move and then when they moved, they jumped. I am not in favour of taking decisions hastily. With respect to your question, first, London is putting together a desalination plant on the Thames. There were many arguments about that and they have been looking into that. Perhaps that is not so well known. They have done studies on desalinating the Thames. People think only seawater is very saline but the Hawkesbury River is almost as saline as the sea.

CHAIR: Is that under the current flows or naturally? A big issue is that there are insufficient environmental flows due to the Warragamba Dam and so on.

Professor SHEIKHOLESLAMI: Yes. That is the reason. In many places people use seawater desalination even to recharge.

CHAIR: Where is that done to recharge a waterway?

Professor SHEIKHOLESLAMI: It is done to recharge waterways and aquifers in many places.

CHAIR: Where do they use desalination plant to recharge natural waterways?

Professor SHEIKHOLESLAMI: In aquifers, it is done in lots of places. It is done, for example, in the Middle East and in the United States.

CHAIR: That is an aquifer. What about a waterway?

Professor SHEIKHOLESLAMI: No, it is done in aquifers.

CHAIR: But that would be normal in areas where there is an acute lack of rainfall, which impacts on the aquifers. Much of Australia is like that, but not the Sydney basin. It would translate well to the Middle East but it does not necessarily make it appropriate for the Sydney basin, which has a relatively high level of rainfall.

Professor SHEIKHOLESLAMI: That raises another question. It is not my specialty, but I looked at Australian geographical survey graphs—they are on the web site—on rainfall in the coastal area of New South Wales. People say that rainfall in Sydney is 1,200 millimetres a year but the web site says that the average yearly rainfall in the coastal area around Sydney is not 1,200 millimetres. I do not know whose work to take.

CHAIR: Perhaps we can investigate that further. I have a few questions specifically about desalination plants and their technical function. What is the lifespan of a typical desalination plant? Some people say it is 13 to 15 years for the intake screens and pumps and 22 to 25 years for membranes. Do you agree or disagree? Can you give us any other information? I understand that the membranes have a limited life cycle because of corrosion and sensitivity.

Professor SHEIKHOLESLAMI: In general, the plants are designed to last for 25 to 30 years.

CHAIR: That is the total plant.

Professor SHEIKHOLESLAMI: Yes. Membrane specification is that there is a rotational change of membranes. Manufacturers give up to a 20-year warranty, but they do that on the basis of maintenance—you have to change some of the membranes as the years go by.

CHAIR: Sure. If a plant operates spasmodically—for example, during emergencies—does that have a greater impact on the membranes and such like?

Professor SHEIKHOLESLAMI: That is one of the points that I have mentioned.

CHAIR: What are the physical capabilities of a desalination plant?

Professor SHEIKHOLESLAMI: A plant is like your car. When you operate, it runs. If you stop it, when you restart it it might give you some trouble. So it is the proper operational procedure to design something that is within your needs. Then you can run it 24 hours—around the clock. That is the proper way of operating.

CHAIR: That is the optimal operation.

Professor SHEIKHOLESLAMI: Yes.

CHAIR: I put it to you that a large proportion of desalination plants currently being commissioned are replacements for those built in the 1980s.

Professor SHEIKHOLESLAMI: Yes. The plants are getting old. In addition, the membrane manufacturers used to produce a certain type of membrane but now their standards have changed. So all the new plants that are being built or refurbished are using the new modules.

CHAIR: But I understand that the actual membrane technology has not advanced a great deal. We are still using the same membrane technology that we used 20 years ago.

Professor SHEIKHOLESLAMI: That is not exactly true because the membranes have changed. They used to need much more energy to operate. The types of membranes have changed a lot and require much less energy to operate for the same square metre. In addition, there are two main advances in the technology that has reduced the capital cost and the functionality of the membrane desalination in general. First, the membrane quality has improved and needs less energy per square metre of water that passes through them; and the second thing is the energy recovery systems—the energy recovery pumps. These two advances have been incorporated in the plants and have reduced the costs of operation drastically. That is the reason why I mentioned the cost. It is now 1.8 for certain but they are even claiming 1.6 kilowatts.

CHAIR: Do you not agree that desalination plants are relatively high cost and that it is a fairly short-term solution economically because the costs must be borne again in a relatively short time?

Professor SHEIKHOLESLAMI: No, I do not because I deal with plants all the time. Every plant operates for 25 to 30 years. This is the life of a plant. The operating costs, including the amortised capital cost of a seawater desalination plant, is being traded US50¢ and now they are trying to do US47¢. This is not just a personal opinion; I am looking at the facts—and not only looking at the facts but looking at countries like Singapore, which has 2,800 millimetres of rain per year. This is a huge amount but they have seawater desalination, they are improving their catchments, they are doing reuse and buying water, of course, so they have what they call their four national taps. They just opened up their seawater desalination plant in September. Sorry, no, it is not in my opinion, and I am giving my opinion based on my scientific information and on information internationally. I work internationally all the time and I am relatively new to Australia, actually.

The Hon. RICK COLLESS: Following on from that, you said during your opening address that seawater desalination is for when you do not have the water.

Professor SHEIKHOLESLAMI: Yes.

The Hon. RICK COLLESS: The Committee received evidence today where, in round figures, Dr Essery from the University of Western Sydney stated that stormwater harvesting could yield up to 500 gigalitres a year in Sydney; the installation of 3,000-litre rainwater tanks could yield another 200 gigalitres the year; there was the potential for some 200-plus gigalitres a year to be harvested from groundwater sources plus the roughly 500 gigalitres a year we have been told is from sustainable yield out of the catchment. That is some 1,400 gigalitres of water a year that is available to Sydney before we start recycling the 400 gigalitres a year that runs out to the ocean. If you take all those contributions together, Sydney has available to it something in the order of 1,800 gigalitres a year when our consumption it is only about 600 gigalitres a year. On the basis of those facts why do we need a desalination plant if we have so much water available to us?

Professor SHEIKHOLESLAMI: Again, I am a chemical engineer so I cannot sit here and swear to the amount of water that there is in the catchment. That is not my area of specialty.

CHAIR: This is the information that was given to the inquiry.

Professor SHEIKHOLESLAMI: Yes. Based on what I read—and I gather the information—there are different types of information available. As I mentioned before, the rainfall is not 1,200 millimetres. I have checked the web site of the Australian Geological Survey and it is not 1,200 millimetres. I can mail you a copy of the graph and I can print it out. Based on that, there are various viewpoints. That is one point. The second point is the cost. The third thing is that time. The cost of infrastructure change is enormous. It is not that it should not be done. If there is really that much water available, based on what I see from the sky coming down and based on what I read on the

web, there is not much water, but if there is enough water, by all means they have to put the infrastructure in place, but the cost of putting the infrastructure in place is a lot.

In addition to do that it takes a lot of time. Even if they wanted to be subsidising that, it is not a little bit of a thing to try to infrastructure the whole city. People think about it but sometimes people do not think about the practicality of it. They talk about just catching the rainwater and just putting it back into the house. These are okay scenarios but from the practical point of view there are lots of legal implications.

I remember several years ago that if the water comes and if I get sick or you get sick I can sue Sydney Water, for example. There are lots of legal implications and when you come to the practicalities of it, you have to look at everything. I agree 100 per cent that we have to try to do everything all together, but we have to also look at both the practicality of the choices and also the feasibility of it from both the technical and economic aspects of it.

The Hon. RICK COLLESS: You also stated in your opening address that the proposed 500 megalitres per day plant was bigger than the biggest plant anywhere in the world. What is the biggest plant currently that is operational in the world?

Professor SHEIKHOLESLAMI: Ashkelon in Israel is 340 and it is not 100 per cent operational yet, but that is the biggest one. From my point of view, and remember I am talking about Israel that has been using this technique for years. Israel has got operational and scientific experience. When I started talking about desalination a long while ago, they did not know—Sydney is new to this field and all of a sudden jumping to 500 megalitres per day.

The Hon. RICK COLLESS: So it is more than twice the size of the biggest operational plant, which is not fully operational yet anyway?

Professor SHEIKHOLESLAMI: It is not twice but it is almost twice. Again from the media and by word of mouth I heard that they had reduced the size to 150 megalitres per day, so they had reduced the proposed size, which is reasonable; 150 megalitres would be reasonable. For example, the Perth plant is 124 or something megalitres, so 150 megalitres is reasonable and then they can operate it all the time. I should make one point that when they were thinking about the selection of this site, at that time I was travelling overseas and immediately, because I am a chemical engineer and I work with Caltex a lot, I thought the best possible location would be Kurnell. They had not even started it.

The Hon. HENRY TSANG: Why?

Professor SHEIKHOLESLAMI: Because it is an industrial site. There are a couple of other reasons. Caltex or any refinery needs huge amounts of cooling water. They need lots of water intake so they can combine the intake. Because this is cooling water they can discharge it at the same time. For example, there is a plant, which is now being built in Carlsberg in Southern California, where intentionally they have put it next to a power plant so that they get the water together. Even at times, because the chemical plants get the water again for cooling water and they discharge it—but they get the water—in reality the water goes through a series of treatments within them and then they can send it to the desalination plant. If they try to put things to operate together—mix and match—it operates better.

Me not knowing what they were planning to do, when they announced that they would be looking from the southern beaches all the way to the northern beaches, I thought, "Gee, my God, why are they going to go all the way to the northern beaches. Kurnell is such a perfect site for that."

The Hon. HENRY TSANG: What about energy from the chemical refinery? Is there excessive energy that is discharged that could be used?

Professor SHEIKHOLESLAMI: You mean for the refinery or the desalination?

The Hon. HENRY TSANG: For the desalination, that could draw some of the waste energy.

Professor SHEIKHOLESLAMI: That is a very good point because there are our lots of waste energies in the refineries. There are lots of waste energies, for example, in mineral waste processing industries. If they want they can try to mix and match them. I know that there are some small plants in northern Queensland they are thinking about putting with the mineral processing because mineral processing industries and chemical industries consume high levels of water. It is not a very little consumption. If you look at the water consumption in Australia more or less everywhere only 15 per cent is domestic users, 25-30 per cent are industrial users and about 60 per cent are agricultural users. So if they try to co-locate desalination plant with other plants they can try to take advantage of it. As I mentioned initially with the power plants—for example in this case it is not—but since they are putting it in Kurnell, if they put together a mechanism in place to really work hand-in-hand with Caltex it would be very beneficial because Caltex uses lots of cooling water.

CHAIR: Currently Caltex effluent is pouring straight out into the ocean from its plant?

Professor SHEIKHOLESLAMI: Of course.

CHAIR: Are you saying there is nothing to stop the desalination plant on the peninsula, instead of accepting sea water, for it to accept Caltex's effluent and desalinate or rejuvenate that?

Professor SHEIKHOLESLAMI: That is one of the alternatives which could be looked at, yes of course.

CHAIR: There is nothing technically that would preclude taking that industrial effluent from the Caltex plant and through desalination producing potable water?

Professor SHEIKHOLESLAMI: I have to make a distinction. It is not really effluent in that way, it is the cooling water so it just goes in: it cools the process.

CHAIR: You have said you have had a fair bit to do with the Caltex plant. What is the nature of the water currently going into the Caltex plant? Is it potable Sydney water?

Professor SHEIKHOLESLAMI: They take it from Botany Bay.

CHAIR: Caltex takes sea water and puts it through the Caltex plant and expels it back into the bay or thereabouts?

Professor SHEIKHOLESLAMI: Of course, in reality the temperature of the water has gone up.

CHAIR: There is no contamination?

Professor SHEIKHOLESLAMI: Of course, you know, when you have got chemical plants there might be cross-contamination a little bit, but those could be dealt with. You can put provisions in place to deal with those things. Also, I do not even have in mind the volume of the water that Caltex is using but Homebush would probably be compatible. But a lot of options are available. As I mentioned, Caltex withdraws water, discharges water, exactly that is what it does.

The Hon. HENRY TSANG: Caltex takes water and discharges it into the bay. It could mix, with the discharge from the plant, to dilute the content of the salt, with the result twice the salt maybe removed.

Professor SHEIKHOLESLAMI: Yes, that is true.

The Hon. HENRY TSANG: So the Committee could recommend that if that takes place it should take into consideration working in conjunction with other industries in the peninsula?

Professor SHEIKHOLESLAMI: Yes, very much so. It is very important. That is the whole issue. In reality in the real world as individuals we cannot live in isolation. I guess when you look at the industries, if they want to operate in isolation it would not be as productive as if they tried to—

CHAIR: So, on the logic of the Hon. Henry Tsang, the current pilot plant using the sewage outfall to disperse the saline solution, is that a deliberate thing on the part of the pilot plant operators?

Professor SHEIKHOLESLAMI: Yes.

CHAIR: Is that part of a plan to test out the viability of it so that we actually have a shandied down saline product going out at the outfall?

Professor SHEIKHOLESLAMI: Yes, that's what they're doing, yes.

The Hon. GREG DONNELLY: In terms of desalination plant technology, I guess over the decades it has become more efficient and the unit cost of the output of water has dropped?

Professor SHEIKHOLESLAMI: Yes.

The Hon. GREG DONNELLY: If you look at the continuum of how that has taken place over time and try to forecast into the future, is it likely there will be an quantum jump or improvement in relation to efficiency and cost through new technology with respect to the operation of the plants, or is it going to be part of an ongoing curve in regard to those things? In other words, are there any breakthrough aspects of desalination which are on the horizon which might radically change the whole process?

Professor SHEIKHOLESLAMI: On the horizon I do not think so. A drop in the cost has been exponential but now it is, more or less, still dropping but gradually.

The Hon. GREG DONNELLY: Marginally?

Professor SHEIKHOLESLAMI: Yes, marginally. About a breakthrough in technology, there are people looking at different things for desalination but in general desalination, as I mentioned it is the separation of salt and water, so either you have to have a physical barrier or you have to have some thermodynamic barrier. So they are trying to look at different things but the new ideas that they are looking at in the laboratories are very expensive. With lots of those ideas the cost is a function of the salinity so the higher the salinity, the higher the cost of operation. In reality, on the horizon, as far as I can say and see, there is no big reduction, but of course, there is marginal reduction coming down. I doubt there would be big reduction in the cost. I think a big reduction in the total cost, in general, is going to come in hybridisation and co-location and trying to take advantage of the wastage in different circumstances and try to make use of that. In the near future I think that would be the outcome.

Ms SYLVIA HALE: The discharge from a desalination plant is also heated, am I correct, or does it come out as cold water?

Professor SHEIKHOLESLAMI: No, it is not going to be really heated, three or four degrees higher temperature. Are you talking about membrane desalination?

Ms SYLVIA HALE: Yes, at the pilot plant.

Professor SHEIKHOLESLAMI: Yes. In the thermal desalination plant it will be heated a little bit more but in the membrane desalination plant, no, the temperature rise is very limited.

Ms SYLVIA HALE: If you were to mix it with the water discharge from, say, the Caltex plant, it would be heated one or two degrees?

Professor SHEIKHOLESLAMI: I think the Caltex discharge is already a much higher temperature. So that the temperature going out of the Caltex discharge is much higher. For example, I do not know the temperature, but if they take the water at 15 degrees Celsius certainly they are going to be dropping out at about 30 in Caltex.

Ms SYLVIA HALE: What sorts of organisations or people are members of the Australian Desalination Association? Is it primarily academics or companies that install plants?

Professor SHEIKHOLESLAMI: We have got about 30 per cent academics, 30 per cent government and about 40 per cent from industry so it is a very mixed bunch of people. We have got corporate members from the industry and, believe it or not, we have got a very interesting bunch of people from industries, such as, something that people might not even think of, salt producers. We have got several companies that produce salt and are members. Again, it is not applicable to sea water desalination, but with inland desalination in brackish water, desalination where they do not have the sea to drop the water and where the salinity of the bore water is relatively low, what they do is they recover the salt.

Ms SYLVIA HALE: Presumably its membership is primarily Australian, that there would be representatives of overseas companies?

Professor SHEIKHOLESLAMI: All Australian.

Ms SYLVIA HALE: Would you say that collectively it represents the best experience of desalination that is available in Australia?

Professor SHEIKHOLESLAMI: That is available in Australia, yes.

Ms SYLVIA HALE: Did the Government consult at all or make any approaches to the association before it embarked upon—

Professor SHEIKHOLESLAMI: No.

Ms SYLVIA HALE: There are two remaining consortium members who have tendered to build the plant.

Professor SHEIKHOLESLAMI: Yes.

Ms SYLVIA HALE: Are those bodies members of the association?

Professor SHEIKHOLESLAMI: Their companies are. Each consortium is made up of several of them, and the main of both of them are. I think two of each consortium are members of the company. GHD for sure is. Veolia for sure is. Sinclair Knight Merz—

Ms SYLVIA HALE: But they are all consultants, are they not?

Professor SHEIKHOLESLAMI: Not Veolia.

Ms SYLVIA HALE: No, I know that Veolia is a major water—but GHD for example is mainly a consultant rather than people who are actively engaged in desalination projects.

Professor SHEIKHOLESLAMI: Yes, but let me tell you something. Even people, for example, for big companies like Veolia or Degromont, when it comes to the actual design, none of these people in Australia will be used. Veolia in France is the one which is taking on the major capital projects. Within Australia these are the people who are most active.

Ms SYLVIA HALE: But you are saying that, for example, if the Government had consulted with the association and there had been any suggestion of a 500-megalitre plant the association would probably say, "You need to go back and think again."

Professor SHEIKHOLESLAMI: In reality if they had consulted, for sure, but I remember ABC had an interview with me right after the announcement of 500 megalitres. I did say on public radio when they asked a question, I said the 500 megalitre size is unbelievable to me.

Ms SYLVIA HALE: But by that time the Government had committed itself to that project.

Professor SHEIKHOLESLAMI: Yes. If they had consulted, for sure, because there are certain things that when you have been in the industry—personally I am on the journal of desalination. I am on the board of the International Desalination Association. Also, I have affiliated the Australian

Desalination Association with the International Desalination Association so we have almost anybody who knows anything about desalination in the world.

Ms SYLVIA HALE: Was there any awareness that the Government was contemplating such a project, or did you hear about it when the rest of the community heard about it?

Professor SHEIKHOLESLAMI: I am a chemical engineer and I happen to be chair of the Federation of Chemical Engineers of Australia and New Zealand. We had our annual conference in Sydney a year ago. I think Frank Sartor happens to be a chemical engineer and he came to give the opening remark and that was where I heard about it.

Ms SYLVIA HALE: But there had been no discussion basically in the industry beforehand of the possibility?

Professor SHEIKHOLESLAMI: Not as far as I know, no.

(The witness withdrew)

(The Committee adjourned at 4.34 p.m.)