C O R R E C T E D V E R S I O N

ENVIRONMENT AND NATURAL RESOURCES COMMITTEE

Inquiry into Sustainable Communities

Melbourne – 6 July 2004

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Ms H. Lewis, Director, Centre for Design, RMIT

The CHAIR – I declare open the Environment and Natural Resources Committee hearing into sustainable communities. I welcome Ms Helen Lewis, director of Centre for Design at RMIT. All evidence taken by the committee is taken under the provisions of the Parliamentary Committees Act and is protected by judicial review. However, any comments made outside the precincts of the hearing are not protected by parliamentary privilege. All evidence is being recorded, and you will receive a proof version in the next couple of weeks. If you would like to make your presentation, we will then take questions.

Ms LEWIS – David asked me to give a fairly general presentation about the work we do, so ask questions and perhaps we can then narrow it down to any particular issues. The Centre for Design is a small research group within RMIT. RMIT is developing quite a strong program in sustainability, but we are one group that looks at environmental design in buildings as well as products. I will show you some of our projects.

Overheads shown

We have four areas of activity, looking at products, buildings, materials and life-cycle assessment, which is a tool that organisations use to evaluate environmental impact, and that is, use in design.

We do long-term research projects, but we also do a lot of short-term projects, and I will talk a bit about those. We do professional development for industry and government and NGOs in areas like sustainable packaging, green design and building, and so on. We get involved quite a lot in developing tools – whether they are life-cycle assessment or more qualitative tools for evaluating products – and I will run you through some examples of the sorts of things we do.

We have had quite a history in environmental design where we work with companies to look at design to integrate environmental issues into the design stage, so right at the beginning at the concept stage and then through the detailed design process. Quite a lot of our work is also in what is called product stewardship, which is a bit of jargon, but it is really looking at the life cycle of products. So it might be focussing on the end of life of TVs or computers or packaging. The approach Australia has picked up on is one of shared responsibility rather than putting all the responsibility on producers, which is the European model – or the German model in particular. In Australia we have tended to adopt a shared responsibility model where local government, industry, state government, and so on, get involved in managing products. We have also been involved in quite a few projects to look at the feasibility of recycling – for example, TVs and computers.

Just to give you a quick snapshot – we had a project a few years ago where we worked with some major companies, such as Southcorp, on redesign of appliances. This was one that did end up being commercially released at the time, which was in the mid to late '90s – water efficiency and energy efficiency of appliances was quite new, so it was quite a landmark product at the time, but it has been overtaken now. We worked with Kambrook on small appliances. They were also looking at picking up on what they saw as a green market. It was not quite as green as they thought it was going to be, but that was an energy-efficient appliance.

Ms DUNCAN – You mean there was not the demand for those appliances?

Ms LEWIS – No. A lot of companies had the wrong idea back then – which was probably reasonably based, given all the surveys that were done – that people would pay more, so they were designing products that would cost more because they were spending more on R & D and so on. And even though people like the idea of greener products they will not necessarily pay more. If everything else is equal, they may buy an environmentally approved product. So there was a bit of an idea that they could produce, particularly in the market segment for Kambrook products, certainly the cheap end of the appliances market – kettles were selling for say $20 and theirs were selling for about $50 so it didn't sell very well. But that is something a lot of companies have learnt from, because a lot of companies in the early '90s tried to design green products but charge more for them. And they had the unpleasant experience of finding out that they didn't walk off the shelves just because they were green.

The commercial furniture area is quite different. At the moment there is a huge amount of interest in specification of greener products for offices, whether it is furniture, carpets, paints and so on. When we worked with Schiavello it was all very new, and at the time people were concerned about waste from commercial fitouts because they change over every five or seven years, so they designed quite a flexible system that would try to minimise waste because it could be redesigned and refurbed and so on. Now that was really early on, and once again it did not really take the world by storm, but

again they were ahead of themselves because now every major furniture manufacturer is trying to produce greener products with less emissions, and more recyclable and so on.

This is a more recent example. This was a New Zealand company we worked with to design a chair that was much more lightweight and could be taken apart at the end of its life for recycling. They try to design things that don't look green but just look good.

Ms COOTE – It looks so uncomfortable.

Ms LEWIS – It's actually not. You are right, it does look a bit severe.

Ms COOTE – It looks very orthopaedic.

Ms LEWIS – We do a lot with packaging companies and brand owners. That is the other sector we work a lot with. They are under pressure, not so much because of the buyers but because of regulation internationally and also in Australia. We are working with Nestle to integrate design for environment into their product development process. That is the other mistake I guess we made, and a lot of people made earlier on, that we did special demonstration products that did not necessarily embed ecodesign in the company. Now companies are wising up that they actually need to rewrite their policies, redesign their product development processes to make sure that these issues are seriously considered; it's not just a superficial process. Nestle, because they are a global company and because they are a major company in Australia, are really trying to do it in a serious way. This is an example of one product that they were criticized for because it was not recyclable

Ms COOTE – If you were working with them, why didn't this surface?

Ms LEWIS – We weren't working with them then. They realised they really had to get the marketing people involved because this was a good-looking pack, and it wasn't until this happened that this really blew up and they asked the question, "Why didn't anybody think about recycling?"

Mr DRUM – Helen, just on that: with the kids, they buy a soft drink now or cordial, like a sports drink, and it generally comes in the poptops. We get to use those containers six or seven times before they lose them, or they don't come home from school; is this an environmental push?

Ms LEWIS – That is a marketing push. In fact a lot of those have a little message on them saying, "Please don't re-use", which is contrary to environmental messages, but they are doing it for health reasons. But yes, if you are re-using something at home and it is replacing something else you might have bought – if it was an environmental thing, it is a bit of a gimmick because you would still replace it even after you had used it six or seven times, but it is still better than throwing it away after a short-time use.

We became involved a few years ago in a pilot-recycling program for TVs. That was exciting. We set up a collection-recycling program out in the eastern suburbs of Melbourne. That is now being implemented in a major national program to take back TVs; there is a charge going to be put on new TVs to fund recycling at the end of their life. We were involved in the early days of the research. These sorts of products are really complex and difficult to recycle because they have hazardous materials in them, they need be to taken apart. They were not designed to be taken apart, and many of these are five or six years old. But they are a hazard. In an environmental sense they are more important than packaging because of the hazards involved in heavy metals and so on. So this program will be really the next big initiative in consumer products after packaging. The computer industry is just lagging behind a little bit but it will be the next one to set up a national program.

Ms DUNCAN – Are you saying that all new TVs from a certain date forward will have some sort of levy?

Ms LEWIS – Yes.

Ms DUNCAN – And what is that levy proposed to be?

Ms LEWIS – About $10 or $20, which is not a lot. One of the big challenges is that about half of the TVs that are getting thrown out are "orphan" products, which means that the manufacturer has long since disappeared. So who is going to pay for that huge volume of TVs and computers? About half the computers are either unbranded or orphans – it's a great word. So from a public policy point of view that is a big issue. Certainly the brand owners are seriously behind the program. One of the reasons the computer industry is a bit slower to set up a program is because there is a lot more competition from unbranded products. It is a bit harder to track down the brand owner and they don't want to put a fee on

their computers if their competitors aren't contributing also.

Ms DUNCAN – So with the TV levy, that will be when I have finished with my TV, do I hand it back to the person who manufactured it?

Ms LEWIS – No, they are setting up a new organisation and they will collect the revenue.

Ms DUNCAN – So in about five or six years it will still be recyclable?

Ms LEWIS – Yes, the money will have already been collected.

Ms COOTE – Building on from what has been said – I am trading in my television, do I then have to go to a recycling place or at my point of purchasing the new television trade in the old one, give it back?

Ms LEWIS – I think it is both. Manufacturers and retailers will take them back, but the aim is also to set up a collection at safe transfer stations and recycling depots to make it easier for people.

In Sydney there was a big trial last year. They tried lots of things. They had collection depots at Bunnings stores and Dick Smith stores and they had one-off days that they promoted, but the best thing by far were the permanent drop-offs at the transfer stations. Yes, they will set up systems so they with can take them back, because for people who haven't got a car or they are ageing or whatever and can't carry a TV that's a big issue.

Ms LINDELL – Helen, who is putting the program together?

Ms LEWIS – This one is being managed through the Industry Association and pushed very strongly by the government departments through the EPHC – the Environmental Protection Heritage Council. I think everybody is trying to make it as voluntary as possible, but industry actually wants regulatory backup because it will make sure its competitors are covered. It is being pushed strongly by government, but because the companies are all doing these things overseas it doesn't take much pushing. In a way they have to resolve it.

Just in packaging, we have set up a research program with Victoria Uni and another small R & D company to look at packaging, because there is a lot of activity happening, but it is not really very strategic, a lot of it. People are talking about recyclability as if it is the be-all and end-all, and it's not of course – but also thinking about because our lifestyles are changing and we are relying more on packaging, which is going completely in the wrong direction as far as sustainability is concerned. With an ageing community we are getting smaller serves, we are getting longer-life products, we are getting the eat-away-from-home; all these trends are causing increases in packaging, and we need to think a bit more realistically about sustainability and not just recycling. So there is a lot of work happening in packaging.

I will quickly run through the building program. We did a lot of work with building companies and architects trying to integrate environmental design. This is one; it is a display home at Cairnlea in Deer Park, which has been designed to be not a groovy architect-designed building but a standard project home. It has greywater re-use and rainwater collection and low-emission material, good air quality and so on. It opened a couple of weeks ago. The idea is that you don't want people to have to spend a lot of extra money or to really think about it, but good environmental design should be part of standard offerings by standard housing companies. So it will be very interesting to see how that goes, because once again, we need to convince consumers this is a good thing.

Ms COOTE – Could you give us an indication? Obviously grey water, but what are some of the other things?

Ms LEWIS – Air quality is a big one, because of the implications for a healthy home as well as an environmentally sensitive home, so low-emission paints, low-emission floor coverings. There are a lot of emissions in homes that we are unaware of that are potentially linked to things like childhood asthma and allergies and so on, and it is an area we don't understand a lot about. But we do know there are a lot of emissions from furniture, from timber products, from paint, plastics, carpets and so on. Obviously design to be passively solar it has to be sited properly, insulated against the winter sun, cool in summer; rainwater and grey water used to irrigate the garden; efficient appliances; low water use, and appliances as well – so a lot of basic things. Recycled materials – the concrete slab that was used for the house has recycled fly ash in it from power stations – which makes it not only a good use of a waste product but a much lower use of energy because there is a lot less concrete in it. So a whole lot of things like that that drastically reduce energy and water emissions and so on.

Ms DUNCAN – Helen the new five-star design homes, how costly **– ?**

Ms LEWIS – This will be a six star.

Ms DUNCAN – Because of its grey water or –?

Ms LEWIS – No, just the low energy. Things like air quality aren't picked up by five-star. That is why this is a bit unusual; it was about a whole lot of issues – sustainable timbers and a whole lot of different things. But the five-star requirement will change this sector quite dramatically. We worked with Metricon homes on this project, but all of the major home builders are starting to pick up on this, trying to work out whether it is a competitive advantage or not. Now they have to meet a certain minimum standard anyway, but now you will see a lot of ads about "How green we are". When you read the text some of them are just five-star, which they have to do anyway. Others like Metricon are trying to be a bit more innovative and trying to capture the public imagination and commitment. I think there is a lot of interest; but once again, as long as they don't need to pay much more – cost is a huge barrier for a lot of people. Although they will pay a lot more for the extra room and the huge garage, so it is not just about money, it is about priorities.

Certainly in the commercial building area there is a lot of interest. This is one project we worked on with Darebin City Council to design their new civil centre. They have a wall of solar panels, and they have gone quite a long way down the road in doing a lot of innovative things, but I guess one of the most interesting things about this is that they have designed it as an educational process for their community, and there is realtime monitoring you can watch inside the community centre where you can see how much energy is being used, how much water and so on, so that is quite an interesting initiative from council; and lots of the councils we work with are trying to show a bit of leadership.

We with are working with VicUrban on their new housing development at Aurora. We are looking at the materials they use, which is one of the next big things – yes; they have to be energy-efficient now. They are trying to get their builders to choose materials – things like which timbers they use, which plastics, low-emission paints and glues, so they have made that a requirement of that development. But that has lots of challenges as well, particularly with a government agency when they start thinking about things like timber. There are clear issues like avoiding rainforest timbers, but there are greyer areas about which timbers you use.

Ms COOTE – Malaysian?

Ms DUNCAN – That's out.

Ms DUNCAN – Because that is over 400 lots, isn't it, Aurora?

Ms LEWIS – I think it is, yes; it's a big one.

Ms DUNCAN – They are putting in their own pipeline and they are also going to develop their own sewage treatment plant.

Ms LEWIS – I think they are looking at it. There are lots of interesting questions around Aurora. There are a lot of debates happening at the moment like with grey water. Should we be relying on you and me to put in a grey water system and to run it properly and protect our health and the health of our neighbours; or should we go the third pipe and look at it from a neighbourhood or community development level? I think that is a decision that needs to be made very quickly, because on the one hand we are giving people the message that we will give them rebates for using grey water and so on. On the other hand, there are community risks, and we have spent however many years setting up really fantastic safe ways to use water and sewage treatment and we risk compromising health by going down a more decentralised and leave-it-to-the-people sort of system. I think it is a decision that has to be taken. Maybe it is a mix of the two, that in new developments it's third pipe but elsewhere people put in their own system. But there is a risk, because if I sell my house and somebody moves in and they don't really understand grey water and how to manage it properly. But Aurora is going to set a new standard, so not just five-star but looking at materials and grey water, and it will be interesting to see how that goes.

Just on materials – because there is a lot of interest in materials – we set up web site on products and trying to educate architects and specifiers about how you make a decision, and it is never easy. Very rarely is it easy. Things like Malaysian timber is fairly easy because they know rainforest timbers are endangered. If you come to the merits of a plastic window frame versus a timber window frame or a

woollen carpet versus a polypropylene carpet, each has its own impacts, and it is trying to work through the issues. I think we will all muddle through and all of these issues will become clearer, but this is something that is causing a lot of change at the moment, and also a bit of angst amongst manufacturers. I can see why they are anxious because they are getting judged against criteria that they are not sure people really understand and may or may not have the story right. Industries like the PVC industry are fighting a rear-guard action, and they have got cause for alarm because a lot of people are specifying no PVC; but PVC in many cases has advantages as well as problems, so there are a whole lot of issues we need to work through in terms of sustainable materials. You can go onto the site (ecospecifier.org) and decide if you want low-impact paint and it will come up with a list of suppliers of paints.

Just quickly, life cycle assessment – which is really a tool not an end in itself – but we did a lot of work to map the environmental impacts of materials and products, and this helps us in terms of design and the companies that we work with. This is the degradable polymer that has been developed in Melbourne, and that dissolves in water. This is one – you might have seen the ads – Cadbury's using it in their milk chocolate trays; it is made from cornstarch. The reason they commissioned us to do some research is they were being asked, "Well, it is degradable but what other impacts does it have on the environment?" And any product that uses an agricultural product obviously has impacts back at the farm in terms of chemical use and energy. It doesn't mean it is a bad product, but this is just getting some of this data together so they could understand where these impacts were and then address them. This is potentially a huge winner for the company, in Europe in particular, where they are banning organic materials from landfill; so it is not just about recycling. They are going to have no options soon in terms of putting a lot of products into landfill. So having a product that can be compostible is a huge advantage. This is a local company called Plantic.

Ms COOTE – Do you help them take out patents on these things?

Ms LEWIS – No, they are pretty savvy. That product actually came out of Swinburne Uni the CRC for food technology and packaging, so they did get a lot of government support upfront for commercialisation.

We do work with companies such as Laine. These companies are now starting to market their products on green credentials, which is quite interesting, because Laine don't manufacture all their products. They are looking at their customers and trying to provide them with information, so we help them look at the impacts of wool and cotton and plastics and develop a rating tool for their products; they then use that for competitive advantage because their consumers want to know. So they are providing knowledge for their customers, and it is really becoming more of a competitive arena for these products.

Mr DRUM – Helen, I would have thought the wool and cotton products – are you saying that Laine has the ability to produce those products in an environmentally more friendly manner than some of their competitors?

Ms LEWIS – No. What I am saying is that they are starting to look critically at all the products they supply and where the impacts are and they can educate – well, that informs their sourcing and their manufacturing, so they do do some manufacturing, but then they are helping their customers to choose more environmentally friendly products. So over time I would expect that would change the range of products they offer because it will change the dynamics in the market because it will skew towards the products that are more environmentally friendly. Did I explain that properly?

Mr DRUM – Yes. You are right, but I was interested in cotton, because cotton often gets criticised for using a power of water; it produces a smaller amount of cotton, and I just didn't quite see –

Ms LEWIS – Yes, that is right, cotton does have huge impacts. It doesn't mean that the cotton industry is a complete basket case because there are things that they can do to use less water and fewer chemicals, and that is the message for Australian industry through this, because over time the messages will flow up the supply chain to the suppliers. People like the PVC industry are starting to change the way they make products because they are under pressure. I am not sure it has really hit the cotton industry, for example, yet; but I have talked to consultants who are working with producers because they know they are under threat, particularly in a country like Australia with the water issue is becoming a bigger one. I think over time it will change industry and the way they do things.

Mr DRUM – Someone like Laine –

Ms LEWIS – Yes, because they will change their suppliers over time.

This was another life cycle assessment we did of toner and ink cartridges, waste products. This was

because they were setting up a big recycling program because a lot of them don't get refilled; some of them do get re-manufactured, a lot don't. This company set up a recycling process where they actually shred them up and recover the materials, but they knew they would get a fair bit of criticism because people would say, "Well, refilling is better than recycling" but they thought they had better get the data to find out whether this was true or not. We did quite a lot of work with them, which was quite interesting because there were a lot of agendas. The recycling program will actually recover much more of the products overall, and that is what we found: that if you are looking at one refillable and one recyclable, refilling is better; but if you look at the system as a whole, the fact that these guys are recycling the overall environmental impact would be less. That is a bit of a live debate at the moment. The report hasn't been released yet. This is being managed through Planet Ark, who is collecting the cartridges for manufacturers, but it is a very interesting question, because everyone is doing things for commercial reasons as well as environmental reasons.

Ms COOTE – It is seriously complicated trying to do this.

Ms LEWIS – It is seriously complicated trying to do the analysis.

Ms COOTE – No, no, trying to recycle this. I have just done this, and I have had it for so long I will have to put it in a rubbish tin after a month.

Ms LEWIS – You need to ring these guys.

Ms COOTE – Where do I go? That's absolutely the point. Where do I go? Cart this thing around with me in the car for the next couple of days to Castlemaine, Horsham and Warrnambool, or how does it work?

Ms LEWIS – That is an absolute key issue. It is like purchasing. You have to make it part of everyday life and make it convenient. That is why kerbside recycling works. You have people who are not in the slightest way green and don't really care about it, but it has become standard practice, so they do it. These sorts of things have to be easy. If you don't know how to do it, you won't do it.

Ms COOTE – This was putting it into a post pack, putting it into a post office box – and it is all too hard!

Ms LEWIS – Electrical and electronic –

Ms COOTE – I have a fairly low tolerance.

Ms LEWIS – You and most people really. This is what is interesting about the TV take-back. All these different sectors looking at how they can recover their products – these guys have one program, the mobile phone people have a program, the TV industry has a program, the computer industry is looking at having a program. In fact what we need is one bin where you and I can put our phone, our TV, our computer, all electricals, because there is lots of crossover in terms of component and safety issues. That's how we will end up; it is just a question of how much grief and expense we can go to before we get to that point. But there will be some version of roadside recycling and drop-off hopefully that will be easy for these people. It is pretty clear.

In terms of giving some thought to sustainability – I guess in the work we do it is pretty clear we have the technology for a lot of this. The technology is known. It is not like we need to work out what a sustainable package is or what a recyclable TV is. We know all this. We know how to design efficient houses. We know how to design seven-star and eight-star houses. The issues are really about changing behaviour.

A lot of the work we do on packaging is how do we change consumers, or should we change consumers; should it be something that industry does so that all packaging is sustainable to the environment? I actually believe there is a strong level of awareness and interest in the community – if it is easy, it goes back to that issue, and that's the same whether it is packaging TVs or whatever. If people are provided with the options and it becomes a normal thing, they will do it. That is a combination of education as well as manufacturers making products available.

In terms of what government needs to do, I think things like the five-star program is pretty strong and clear message out this to the industry as well as to consumers. Just listening the talkback on radio there is a lot of interest out there. People will do the right thing. They want to know how to do it. Knowledge is one thing, but then making it easy is another. Regulation is interesting. It is interesting with the computer industry, for example, that is putting in submissions at the moment. They want regulation; and when I read it I thought they must want some sort of scheme where companies have to be part of a program otherwise they will be fined or something. But no, they want a landfill ban. At least

initially they are looking at, “Well, if we are setting up a program we don't want people having a cop out where they can just dump things in landfill so let's ban the products from landfill” and therefore everybody becomes part of a scheme. So it is an interesting and slightly different way of looking at the regulation. Things like timber, computers, green waste, concrete – we have got the technology to recycle these, it is just that it is economically difficult because they are expensive to recycle and they are cheap to buy. So it is changing the price signals, or making landfill not an option, which is how it is working in parts of Europe, where they just ban packaging from landfill or disposal like in the Netherlands, so that forces everybody to sort it out. I know some governments are looking at this but –

The CHAIR – I am just thinking of all the people in the street; there are millions of people.

Ms LEWIS – Well, exactly.

The CHAIR – It is sort of Big Brother–ish.

Ms LEWIS – And it is something that hasn't happened for that reason, and we have to make sure we have the systems in place. You have to make sure people aren't just going to dump illegally or it is not a cost impost that will stop people doing the right thing. So that's where we are. We are quite optimistic about what is happening at the moment because there has been a huge change we found in the people we work with – a lot of interest.

The CHAIR – I was interested in the barrier side of things. You spoke earlier about the Kambrook kettle and that price being a barrier and stewardship. I guess there are other barriers to that if people feel it is something they are going to get around with their products – and again you can regulate and set standards but it is all a bit Big Brother-ish. How do we actually educate people, or get people to be aware?

Ms LEWIS – It is a real mix. I don't think education is enough. Somehow we have to change our systems. It doesn't have to be through regulation. Things like recycling are really amazing. Ten years ago we didn't recycle in Melbourne. Now everybody has a bin, and if you didn't recycle you would be a bit of a problem. So it is not really that Big Brother is watching you, it has more become a peer thing; it has been the normal thing to do, and people like to be normal, they don't want to stand out in a crowd. When you see how that has been transformed in 10 years – and I think the five-star program will transform the housing industry quite quickly, at least for new housing.

Ms DUNCAN – I think the rainwater tank was banned not that long ago, and now it is virtually compulsory.

Ms LEWIS – Who would want to be seen washing down their driveway now? It is seen as a really negative and anti-community thing to do, so things have changed, and that is not a hardship thing.

The CHAIR – What do you think the barriers are to paving change? Is it a cost barrier or a reluctance to change?

Ms LEWIS – People need to understand how things affect them – their families, their health, their community, and then it means something to them. If it is more in the abstract and to do with science and about the ozone hole up there, it is not going to change. I don't really know what the answer is, because we are going through this at the moment with packaging and we are looking at all the research, which seems completely contradictory. On the one hand you survey people in the supermarket and 80 per cent, 90 per cent say yes, they are aware and concerned about the environment, but you look at what they have bought and it has had no impact on their purchasing; none.

The CHAIR – You don't have a choice.

Ms LEWIS – That is where we got to in the end. We thought is there a real discord here where we think one thing and do the other? But if we are not given the opportunity to make the sorts of choices we might make otherwise –

Ms LOVELL – The packaging thing is a bit of a catch 22. I come from a retail background so I understand where things are packaged so well. We once had a toyshop, and kids would get into things no matter how well they were packaged. So I can understand why – especially toys and things like that – are over-packaged; also, the way that they will stack on shelves and the breakage. It is more like the fact that they are tied in plastic ties, they then have a plastic bubble around them; then they are in a box and then they are plastic shrink-wrapped. It is all about protecting the product so they have less damage from factory to shop floor, and it is also about protecting damage while they are on the shelf, and things like that.

Christmas Day I looked around the lounge room after the kids had undone their presents and I thought, " Oh my God, what are we contributing to?" But then if you had gone at the store point and thought, "Well, I won't buy that unless it was not packaged", they would have just thrown the packaging away at the toy store end.

Ms LEWIS – They do not want to get their products damaged and they understand why packaging is there, mostly. It is when they are either putting it in the rubbish bin or looking at it, and then they feel guilty.

The other thing, I guess, that shows people will make changes is the plastic bag issue – which in some ways has blown out of all proportion, but in another way is symbolic about people's concern and is something they can do something about. In the last couple of months there has been an explosion; it is amazing –

Ms COOTE – Because the bags work.

Ms LEWIS – They work – and they are not just crushed up dirty bags, hessian things, they are nice-looking bags, and they have become acceptable and you see mum with 10 bags over her arm, not just one calico bag.

Ms COOTE – I have a comment about the packaging actually, and that is in Sweden they didn't experiment on marketing to try to change behaviour. What they did was that they would peddle by and buy whatever products they wanted to buy, so the safety issue was still there; they would take it off the shelves but they would provide a huge bin to discard the packaging at the time of sale. So they were able to say to the manufacturers at the end, " Well, none of this stuff was ever needed". What they did was to change the manufacturers' approach to this by people power, by people saying, "We don't need all this" –and apparently it worked very effectively. I think that is an interesting way at looking at the problem.

Ms DUNCAN – People might say they have made their choice at the supermarket but then they will take it to the check-**ou**t and say, "Well, I can get rid of all that packaging now" but it is because they had made their choice. I bought a packet of cereal the other day and couldn't fit it into the pantry, so I took it out of its box and as soon as I took it out I thought, "That's all I need. Why have I got this big cardboard thing?" And if the bag was just sitting on the shelf like that, every product would look exactly the same as the other, and how do companies distinguish themselves?

Ms LEWIS – And also the bottom part of your Corn Flakes would all be crushed because they would have been crushed in transport and you wouldn't have been very happy when you bought it! So often what looks like extra packaging often is necessary. It is working out that balance between environmental and other requirements, which is the tricky bit really.

Mr DRUM – You said today the debate is still on, and we still haven't worked out whether it should be an individual thing or more of a community thing. Some of the other issues: should we recycle individually, do we just have to wait for those debates to come to fruition, or do we need to invest more in research so that we can actually get to our destination with those debates – because as you said, the decision about grey water needs to be made now.

Ms LEWIS – That is a critical one, because it has to do with health issues as well as how we invest in that as a community. I think that will come to a head quickly. All the companies are very conscious of this, so I think you have to start doing things because that is when you learn, and I guess we will learn from all these projects. That will have an influence on policy. I don't think we can wait, but I think that one is perhaps a bit more critical. Some of these other issues in terms of material will come to a head because of the politics of it all. So I think we have to get it right, and I think we have to err on the side of caution if we don't have the data. If we do, we need to act quickly – but I guess a mix. I think the water one, because it is moving quite fast, will get resolved quite quickly.

Th CHAIR – Thanks very much, Helen, for your time today. It was very interesting.

Witness withdrew.

C O R R E C T E D V E R S I O N

ENVIRONMENT AND NATURAL RESOURCES COMMITTEE

Inquiry into Sustainable Communities

Melbourne – 6 July 2004

Members

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Mr D. Drum
Mr G. Hilton
Mr G. Seitz
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Witness

Ms E. Abram, CEO, Moreland Energy Foundation Limited

The CHAIR – Esther, all evidence is taken under the provisions of the Parliamentary Committees Act and is protected from judicial review. However, if you make any comments outside the precincts of the hearing, they will not be covered by parliamentary privilege. All evidence is being recorded, and you will receive a proof transcript within the next couple of weeks.

Normally we have a presentation and then set aside time for questions, if that is all right with you.

Ms ABRAM – Yes, that sounds good.

The CHAIR – I'm very happy to be here today to make my presentation to the committee. Just quickly, what I'm going to talk to you about today is an introduction to MEFL and our approach, some examples of our programs, projects and partnerships, a little bit on community power – which is something I was specifically asked to speak about – a bit on low-cost measures, which is part of your terms of reference, integrating government and community initiatives, measuring emission reduction, and finally, I will leave you with some recommendations.

Overheads shown

The Moreland Energy Foundation is the only one of its kind in Australia, which is part of the reason you are hearing a lot about us, because we are unique. We believe we are a model that has the capacity to be taken on board – and in more areas than just Moreland. The foundation was established by the Moreland City Council for the purpose of reducing community greenhouse gas emissions. As mentioned before, we actually came out of the old Brunswick electricity supply department, so when the SEC was privatised and councils were forced to sell their electricity retailers, there were two that were from the council that became Moreland – there was Brunswick and there was Coburg. The Brunswick electricity supply department in particular had run really innovative community greenhouse gas emission reduction programs. They weren't just selling electricity; they were helping people minimise their use. When that asset was forced to be sold the community said it really valued it and that it wanted something to continue in that vein, and it eventually became MEFL. We commenced our operations in mid-2001 and started working at a community level in 2002. So we have been really operating programs and projects for only two and a half years, but I think we have made some unbelievable achievements in that time. We focus on Moreland, but we also work outside of Moreland because there is a lot of demand for things that we are doing. We actually do consultancy work and work in partnership with a range of councils so we can spread the methodology further.

We have, I guess, a particular approach. We are not part of council; we are a separate organisation that works out of the old Brunswick offices with a whole lot of other community-based organizations and small companies. Our approach is around working on reducing energy usage and electricity and gas emissions for the whole of Moreland, so we are not just about preaching to the converted. There is a solid green community in Moreland, but we don't tend to work with those people on a day-to-day basis. They are members and supporters, but we actually try to get to work with people who are not interested in energy and to get them on board.

We are about creating real change – that is in the way we design our programs – so having got some good methodology behind that, we monitor the impacts of our projects to see what we are managing to achieve, if anything. We also do advocacy, so when we can see that change is not occurring – not because the people are not trying hard enough or not doing the right thing – and there are barriers to that change, then we use advocacy as a means of trying to get around the barriers.

We are interested in a broader sustainability agenda, so we focus on energy, but our work naturally touches on other issues, because when we are talking to householders about energy they will ask us about water as well. When we show them what their greenhouse gas emissions are for their household and they see transport going off the scale, then they become interested in transport too. So we do try to pick up on some other issues, but our body of expertise is in energy. We also see in terms of sustainability that we add social capital because we are working with schools and community organisations, trying to build that sense of community, working together to reduce greenhouse gas emissions, which is a really positive thing. We also try to increase the financial capacity of small businesses and households, which is a good thing in itself.

We also do a lot of projects in partnership. Action research is another part of our key approach, so we actually build into the design the people who we are going to be working with – where they are actually participating in the design of projects.

The picture there is of Geoff Grace, who is a member of our board – with the minister – receiving the

award we won last year – from the Clean Air Society of Australia and New Zealand. It was a real privilege to get an environmental achievement award from the Clean Air Society.

I have a few photos, because I think it breaks it up and gives you a better sense of what we are about. This is an example of us taking our message out to the community. This is a stall we held at the Eade Festival in Moreland at the beginning of last year. The Eade Festival is a major festival for the Arabic and Muslim community, and so because we have got such a large and growing community in Moreland it is really important that we make contact with these people – and we are actually working more intensively with that community now.

Partnerships: within Moreland we have a wide range of partnerships. We found that if you are wanting to work with people who aren't going to put their hand up to do it, then you've actually got to work through other organisations. Schools and kindergartens are really good places to make contact with families and to get to actually put yourself in front of them and get their interest. Council as a separate organisation is also a partner of ours. There are some projects that we deliver directly through council. For instance, we help to train their home maintenance workers to do retrofits, basic energy-efficiency retrofits for the households they go to and do things to – like elderly people who need light bulbs changed, getting them to put in compact fluorescents, getting them to put on draught blockers if they are having difficulty keeping their houses warm, those sorts of things.

Also football clubs: football is such a popular thing in the Australian community, and it has been an area that we have wanted to work with in partnership for some time. We were very fortunate to bump in to someone from the North Coburg Football Club last year, and we now have a really great project, which I will talk to you about in a little while, which has been fabulous. It came about through meeting someone from a footy club at a stall. We do a lot of work with small businesses on a one-to-one basis, but we also work through their peak bodies – the Traders Associations and the Chambers of Commerce, which is a really fabulous way of getting small businesses on board. At a state level we do some work with the Sustainable Energy Authority of Victoria helping them to deliver on their priorities. We try to project our expertise into some of their programs. Also other local government: the Northern Alliance for Greenhouse Action is actually an alliance of six northern councils. The environment officers get together to plan what sort of work they are going to do on greenhouse and to cooperate. It is a really good model for trying to get limited council resources spread out over a broader area, and to get that level of expertise shared. We have done a couple of really good projects with that alliance.

Community power is another partnership project we have been involved with since our very early days – and I will talk more about that in a little while.

Corporate: we are actually getting more demand from business to deliver projects to their employees, particular little training modules we run. We teach people to do their own home energy audits, which is something businesses like to offer to their staff as an extra staff development opportunity. That is really great, because again, we are extending out into a much larger community working through workplaces, and I think that has a lot of potential.

We have three program areas that all of our projects tend to come under: community entities– that is all the community organisations and facilities where people congregate; some schools, kindergartens, libraries – that whole range; households and business – and our business program is very much around small business.

Our community entities program, as I said before, is about organisations and facilities around which the community congregates. We aim to help the managers of those facilities improve the comfort and the energy performance of their facilities and also to try to give them some assistance with resources. This has been a key barrier for those types of organisations, so we have been involved in setting up a particular fundraising approach for kindergartens, for instance. We think it is really important to work with those organisations, because you can achieve a lot for them– like for instance a school or a kindergarten, you can make a lot of difference to the comfort of the people who use that facility and reduce their bills so they can have more money to use on other things. But it is also very important for us to extend that work out into the community so that it congregates around them – being able to get access to the parents, for instance, and to offer services to people is a really positive thing.

In terms of the community entities area, the sorts of barriers we experience are funding shortages – that is a really big one. They just don't have a lot of resources. A lot of community organisations do fundraising for just about everything; they are constantly chasing dollars to run a really basic level of service, so if you come to them and say, "Well, you could make your building much more energy efficient by putting on external blinds and fixing this, and you need to get rid of your old

heater and get a new one" – they just can't come at the idea of getting that sort of money in the door.

Time shortages: again with the kindergartens we work with, they often have parent- run committees and they have an incredible amount of work and responsibility on their shoulders, so again just finding the time and the space to talk about their energy bills can be very difficult. Perceptions of safety. There is this idea, now particularly, where children are concerned that getting hot is a danger to their health. This is very different from where I was at school – if I was complaining about getting hot, I was told to have a drink of water, and that was all the sympathy I would get from my mother! Whereas now, parents are demanding that schools put in air-conditioning to keep children cool, and that is a very big cost in terms of the infrastructure and the school has to pay the bills for years on. So that is quite a driver of increased energy use.

Lack of standards in buildings: we have discovered, for instance, that one particular school we are working with is going to be demolished and a new school is going to be built in its place at some stage in the near future. The new school plans are exactly the same as the old school, so they haven't actually taken on board any of the knowledge we have now about how you design buildings to be more energy-efficient; it is going to be the same old "cold in winter hot in summer" type of school, and there is nothing that actually prevents them doing that, so that is a problem.

Split incentives regarding non-owned buildings: what this is referring to is that when you have a building that is owned by someone – say for instance a kindergarten, the building might actually be owned by council but it is operated and managed by the kindergarten who pays the energy bills. The kindergarten needs some structural work done on that building, they need to get the council to do that work; however, council is not going to get the return on any of those bills, their bills are not going to be reduced. So you get this split incentive and no-one actually wants to do the work because people using the building don't want to pay to improve the building because they do not feel they will get the benefit of that, even though their bills have come down. Also there is a lack of coordinated approach. Particularly if you look at schools, there are lots of different things happening in schools as far as sustainability, and it is actually quite confusing from a school perspective about who does what and what sort of package you go with, or who do you work with and what is required. There is, I think, a really good opportunity to bring some of this stuff together and actually get more take-up as a result.

This is a case study – the greenhouse countdown project. This is a photo of the kids. When we launched this project it was between four schools and we had a competition to do the launch, because it is a football-and-energy sort of project. This is the winning school, and some of the other kids as well who were involved in the competition.

For this particular project it was a partnership organised by the North Coburg Football Club and Pacific Hydro. It was actually North Coburg Football Club who set this up by realising they had this local community resource they could use. They have an existing relationship with Pacific Hydro; they also have really good outreach into schools, because they recruit their team members from the schools, so they actually helped us recruit schools. We had four schools at this particular time involved in the project where they actually competed to reduce their emissions. Pacific Hydro provided funds for cash prizes. I think that was one of the key reasons we could recruit them so quickly; they were eligible to win two $750 prizes to actually put that machinery into more energy-efficient measure, so from our perspective it was fantastic because they reduced emissions to try to get more money to go into more emission reduction to keep this whole thing rolling along.

Mr DRUM – So the competition was in fact the energy the schools were using or –

Ms ABRAM – No, it was based on the school's energy; trying to integrate in the way we do it with opportunities for the kids to participate in the school's effort to reduce their energy usage.

Ms COOTE – How much input did Pacific Hydro have? Just giving the prizes, or did they push their barrow or – –?

Ms ABRAM – No, they didn't push their barrow. The prize money – and they participated in the launch, so they get mentioned if we talk about it, but effectively we are the ones doing all the work on the ground.

So the foundation was doing the energy audits for the schools in providing assistance, and we very much tried to set up the way they have done the audits and the reports so there is an opportunity to get kids involved in doing more energy work within the school; and also there is quite a bit of room for creativity as well in the approach they take.

Just to give you an idea of what we have learnt from this particular project up to date by comparing two

of the schools – school A has the lowest overall annual emissions, 63 tonnes, but in terms of per capita emissions it's the highest, 467 kilograms per student – the state average being 321 kilograms, which is quite a bit over the state average. School B has actually the highest overall emissions, like double what the other school has, but their per capita emissions are more like the state average – and that is a school which has more kids in its space. With school A, they are a very poor school and their building demonstrates that; it is in need of a lot of repair, and it has a very bad design anyway. It has lots of unshaded windows; its roof is flat, and it is not insulated, and the windows don't fit very well anyway, so it is very much in a bad condition. It has the highest student-to-area ratio – which of course means they will have to spend quite a bit of money on keeping to a small budget to keep that school going. They don't have any maintenance budget, and the capital works budget is very small, so they don't have a lot of room to do the structural work they need. Their equipment is inefficient and old and has not really been maintained. We have also discovered – and this is not actually for this school but for all schools – they have these big fridges all over the place that are on all the time that are running all year round – often with nothing in them – so some of the behaviour that is going on around the school is not very good in terms of energy use.

Because it is such a bad building and it gets very hot in summer, they have a very big absentee rate in summer, which is not a very good situation. School B is much better resourced; it is a Catholic school, a double-brick building, which is better, but also has areas of unshaded eastern and west-glazing surrounded by asphalt, so it has windows that will get a lot of sun on them in summer and also the heat from the asphalt as well so the reflection from that. It is a school that does have a big summer heat problem. They have got a large student population. They have a caretaker, and they constantly do capital works and upgrades. They are even planning a second-storey extension in the future, which has the potential for them to take energy efficiency on board – but they have air-conditioning, a big bank of air-conditioning units, so a really energy-intensive air-conditioning units that get switched on in summer. In a way, basically they are sitting out there in the sun unshaded, so their air-conditioners are working very hard.

I guess we have discovered with this project that when you are dealing with schools, every school is unique in terms of what they can do about their energy situation, also what the problems would be and how you could solve them. For instance, both of those schools probably could really benefit from shading of their windows. If they shaded their windows, they would actually substantially reduce their summer heat problem, but you very rarely see shaded school windows around. Instead, people are jumping to air-conditioning, so there are some things that you could see would work well everywhere, but there is a need to look at every school independently and work out what is going on, and also what their capacity is to actually act.

They need resources to retrofit buildings and to replace equipment. Where there are new buildings being built or new extensions, there really does need to be standards in place to shape the way those buildings are constructed in terms of their energy standards.

One of the things we think will be beneficial is for schools to be able to access rolling funds to encourage behaviour change; so if they manage to make savings on their bill, that they keep that money in order for them to reinvest into energy savings and they can actually get that benefit from practising energy-efficiency by having money to spend on improving their buildings.

This is a photo from another project we ran. It was a very early project, the kinder-cooling project. This is the pilot Brunswick kindergarten; we are in the process of extending it at the moment. We were finalists in the United Nations Environment Day Awards because of this project. They were having a big heat problem, and the parents committee said they thought they should have air-conditioning because the classroom was particularly hot. Grace in the black and red came to us and said, "I think we could probably do something else that does not involve air-conditioning" – particularly as the air-conditioner was going to cost them $ 6000 and there was no budget for that, so we did an audit and we put together a passive cooling plan and came up with a solution that cost just under $ 2000, involving shading. We painted the roof with a reflective paint. We also taught them how to use some of the existing infrastructure that was there to use cooling at night. They had windows that you could drop open that are totally secure, but they were south-facing and they could open up at night to let in cool breezes; also to turn on the fan of their heaters that were drawing air from outside, so that basically the building was cooled at night and they walked into a cool building in the morning, and the sun kept off the building during the day to stop it from heating up.

In order to gets the funds together for that, we organised a chocolate drive selling compact fluorescent light globes to families, so again we were doubling the benefit of energy-efficiency by getting another product distributed through that community, and it has worked basically; that is the key message for the teachers who use that building, they say "Yes, it is much cooler and it is a really comfortable

building to work in." The glare was reduced too, so areas they couldn't use because they had this big sunbeam coming in, all of a sudden became quite usable, so it made a big difference.

Ms DUNCAN – Do you have any figures on what the ambient temperature was and what it now is, because that would be so useful for some schools?

Ms ABRAM – We didn't get that tracking done with this particular project, mainly because of the time of the year and when they came to us and when we got it together, so we could really only rely on anecdotal evidence from people who had been there for a long time. It is something that Moreland is trialling at a school, a particular internal reflective product on this big bank of west-facing windows they have got. They are apparently gathering temperatures, and that type of thing, to try to test it. It is a really good thing to be able to do. Sometimes you don't manage to get in on time to experience the time when things are really running badly to monitor and measure.

Another program we run is for households. We aim to achieve a reduction for households in greenhouse emissions in energy and transport use. We want to see households as focused on energy as they are on recycling, and also in terms of Moreland's households, for them to be able to come to us – before they make any new decisions on energy they come to us first. In terms of households, the barriers they face – one that is really critical is bad house design. A lot of the houses we live in are very badly designed in terms of energy and comfort. They are cold in winter and hot in summer and if they had been better designed in the first place they wouldn't be like that, but most of the houses we have are here now and they are here to stay for some time, so people are struggling with comfort issues and they are responding to comfort issues by putting in very big appliances – so central heating systems and cooling systems.

While we have new regulations for the new homes, which is fabulous – and I heard part of the last presentation, a session about the changing of the market – I think yes, that will start to create an awareness in people that if you actually build energy-efficiency into the design you get a huge benefit from it and it is a really good thing to do. In an area like Moreland most of our houses are there, they are not new homes, but people are doing major alterations and major alterations are often structures that cost almost as much as building a new home, so demolishing the lean-to kitchen, bathroom in an old Californian bungalow house and building a big glass area on the back – which is what often happens – is very expensive. It also often decreases the energy-efficiency of that home and does not improve it, so that is a real problem. One of the things we have been requesting is the major alteration market actually needs to get five-star energy components for that building to be put into place.

Fashion is another big thing. Down lights are very fashionable; people like the look of down lights. They are really bad in terms of energy.

Ms DUNCAN – But they don't give you that impression; they give you the opposite impression. Because of the dimmers so you will use less energy – –

Ms ABRAM – There are people who are experts in the area who you will see in print say they are energy-efficient and they are not; they are low-voltage, they are not low-wattage. For each down light you have a 50-watt globe and a 10-watt transformer behind it, so that is 60 watts just for one. In a room where you would have had a 60-watt globe that would have lit the whole room you will have 10 of these things, so that's 10 times the energy to light one room. But by cutting holes in your insulation to put the transformers in you are reducing the energy efficiency of the building, and they also dump out a lot of heat. People say, "It's very hot in here" so they put the air-conditioning on. Again we have this fashion that is actually driving up the energy consumption of homes. We have had people come to us and say their energy bills have gone up to really high and they haven't done anything different, but that is it.

Ms DUNCAN – Yes, I can see the holes now.

Ms ABRAM – Intermediaries are things that are very important, and they do link into the fashion area. Electricians have been very enamoured with down lights because it is a great job, there is a lot of wiring involved, and if you get paid an hourly rate you are going to get paid a lot more if you are wiring in 10 down lights as opposed to one down light. So there are people who drive the demand for certain things – central heating, air-conditioning. We often get a lot of complaints from people who are forced to upgrade to bigger systems. They have gone in wanting a particular thing, and all of a sudden they come out with this massive system that is much more than they actually need to achieve the outcome they are wanting, so intermediaries are very important in this. Lack of accreditation and standards is linked into that as well. We go to speak to mothers groups. We have a baby kit we take out to new mothers groups and we talk to them about managing their energy when they have a new baby.

When we go in winter we talk to them about central heating. The number of them with central heating systems who are having problems with them is mind-boggling. Often they find the central heating systems have been badly installed; they are running the system but are paying big bills, and they are actually cold all the time because of where the vents have been placed, where the thermostat has been located – also having outlets outside so they are heating a laneway not their home. Part of the problem here is that we do not have any standards in place for people who do the installation so consumers do run a lot of risks when they go out to get things done.

Mr DRUM – Does that really happen, Esther?

Ms ABRAM – Yes, absolutely.

Mr DRUM – All right for the dog.

Ms ABRAM – Why they do it, I don't know. They haven't chosen it, but that is how the system has been set up.

Ms COOTE – Maybe you could leave your children outside!

The CHAIR – I would have thought that using energy would mean running the dryer all the time.

Ms ABRAM – Particularly families with new babies – they run their heaters all the time; they use other appliances much more frequently. There is washing, drying, and their bills do tend to skyrocket. So this has been an area where we think you don't need to have energy bills that are skyrocketing to have happy, healthy children; there are other ways of doing it.

Ms DUNCAN – Overheating babies is not good.

Ms ABRAM – That is one of the things, too, that people run their heating systems 24 hours a day because they are worried about their baby getting too cold, but it is actually too hot, which is a big health issue.

Private rental issues are another big area. Again, you get the split incentive happening. Renters move into properties and they are locked in to high energy bills, and if there is no heater – there is no requirement for a rental home to have a heater – so if there isn't a gas heater, they will be running a electric heater, which is very expensive and very polluting heating. Often there can be very minor problems – very draughty homes, lots of air coming in all over the place, and these are things that tenants have to try to grapple with, try to get their landlord to do something about.

Ms LOVELL – Why electricity heaters; is there a problem there?

Ms ABRAM – Because electricity is far more polluting than gas because it is from burning brown coal.

Ms DUNCAN – At the other end?

Ms ABRAM – Yes, at the other end. Also the electricity market, since the electricity market has been privatised there is little incentive for retailers to sell more electricity not less, so a lot of the demand-management programs that used to be in place don't exist any more. We are seeing things like electricity retailers having tariff structures where the more energy you use the less you pay per unit of energy, which is a very negative approach.

To show you another one of our projects that works directly with households – the Home Energy Stars project is one we have put a lot of time and energy into because we wanted to work with a group of households, quite intensively, to get a really good sense of what they could do easily, what they were prepared to do, where we could get change to occur. So we designed the Home Energy Stars project based on the social marketing theory. What we are trying to do is establish leaders in the community on energy-reduction, because part of the problem with energy is that you can do a whole lot of amazing things to your house to make it more energy-efficient and it is totally invisible to the average person. We wanted to make it a much more public activity by having householders who would have a little plaque they would put on their letterbox, by running stories in the media about them; people practising energy-efficiency and getting benefits from it. We have recruited 85 home energy stars so far. We get them coming in without having to promote the project now; they basically recruit themselves.

The Home Energy Stars themselves: we had an independent evaluation done last year, and it has been a really successful project for them. They were, by and large, really positive about the level of

information that we give them, the support they get. For instance, we go to their house, we give them a free energy audit, we put their details in the Australian greenhouse calculator and show them very clearly where the emissions are coming from, the different areas of their house, or transport. We give them a report that talks about their house and the sorts of things that they can do with some key recommendations, and some other things. We then get them to commit to doing particular changes, and we provide them with help and support. If someone says, " I think I need to get a new heating system" – they know they can come to us and we will help them find the best heating system.

Ms COOTE – What is the Australian greenhouse calculator?

Ms ABRAM – The Australian greenhouse calculator is a piece of software that was developed by the EPA and the Australian Greenhouse Office. You basically go into it and you plug into a particular room – say the lounge room – and it will ask you questions about do you have a television or a VCR, and you put your own details into it and it will calculate how many emissions come from your household. We cross-reference that data with people's bills to see if it is accurate, that the bills reflect what they are telling us.

Ms LOVELL – Is that on the web?

Ms ABRAM – I'm not sure if it is actually on the web. It is software that you can purchase through the Australian Greenhouse Office, and some people who do this type of work have used it, but it does act as an excellent piece of software.

When we got the project evaluated, one of the things that I thought was most positive is that most people said they had long-term plans for change, so particularly people who are home owners were thinking, "All right, when we get to that next stage of renovation we will do it that way and not that way" – which is really positive, because renovators are making all these expensive decisions that lock them into their homes for some time in terms of energy use.

We are now at the point where we are reviewing the first Home Energy Stars we recruited, who have been in the project for a year. This is actually one of our Home Energy Stars. Her situation was that her relationship had broken down and her husband had left the house, but before he had left he told her not to use the gas heater. I'm not really sure why he said that, but she was under the misapprehension there was something wrong with the heater. She has young children and she was running electric heaters because she was at home all the time, and her bills just skyrocketed. We were able to say to her she could use the gas heater, and in fact she could heat the whole living area with that, it is much cheaper. She has saved a lot of money with the program and she has done a lot of things to make her house comfortable. We go right through people's homes and spend time with them.

Just to show you the 13 of the first Home Energy Stars, what the results are. This is looking at comparable bill data from the year before we did an energy audit for them and the bill data the year afterwards. The lilac-coloured column is the pre-audit and the maroon is post-audit.

Ms DUNCAN – What's happened to the second one?

Ms LOVELL – A couple have done badly.

Ms ABRAM – As you can see, we have got people here who have made a lot of progress; we have not people here with little or no change and people who have gone backwards.

Mr DRUM – Could it be they have got teenagers?

Ms ABRAM – There is a whole range of things that actually impacted upon these things. For instance – –

Ms LOVELL – They might have done worse if they had not been on the program.

Ms ABRAM – Quite often that is the case. If you look at the fourth one along, HES021 – this householder has actually been at home three days a week for half of the year, so they have been at home more often, their energy use has gone up – obviously because they were there when they weren't beforehand. They have achieved their reduction through getting a new hot-water service and using their space heater instead of using their reverse-cycle central heater.

We have another household, that little box at the bottom – they were an incredibly small energy user anyway; they are the lowest one on the table. Bear in mind all of these households are under the state average, but with that particular one they have actually bought Green Power – I don't think they could

have squeezed that much more efficiency out of that house, but they have gone and purchased green power, so basically they are an emissions free household.

Ms COOTE – With the hydroponic heating, people were cooking up marijuana.

Ms ABRAM – Which particular one is that?

Ms COOTE – Third from this end: installation of hydroponic heating.

Ms ABRAM – That is right.

Ms COOTE – It is very popular in my electorate; you see them at night with all the fluorescent lights on.

Ms ABRAM – It is very popular, and it is not the most efficient form of heating, hydroponic. Often that is because of the way – it is the radiators that heat hot water that circulates through. A lot of that is to do with the way the installation occurs, as you need to have proper insulation on pipes. Putting a hydroponic panel on an uninsulated wall is a bad thing, because you are losing half the heat going out the back. So people will often take on board things that they think are going to be quite good, but it does not necessarily mean they are using less energy.

We have a really big saving here, the one next door to it, where they shifted from portable heaters with a gas space heater, and they have saved four tons of greenhouse gas per annum – and with the other you can see the opposite occurs.

Just moving on from there: we need to get more data on more households before we can start to average out the impacts of this particular project. At the moment it is just looking at every household and saying, "Well, that is very interesting. I wonder how they have managed to achieve that result." When people take action, it does not necessarily mean their emissions are reduced; they could actually do something in another area of life that counteracts that, or a new baby arrives and all of a sudden they are at home all day instead of being at work, or they could become a consultant working from home, or their kids could become teenagers. There are all those things that occur that have an impact on household energy use. So it is very important that people do take action, but not every action results in automatic reduction of emissions.

Getting big reductions takes time. Renovators are really critical because they are making those really big purchasing decisions now, so if you can influence those decisions you will actually see savings in their energy for years to come. If you come in after that point, often they have already put in a central heating system instead of a space-heating system and they are locked into a system that is going to be using a lot more energy to do the job. Also, the point about people tending to be making big sorts of changes – you don't run out and do them immediately. It is very easy to put in a compact fluorescent globe, but you might not put the pergola on tomorrow; that could be something you do in 12 months time.

We know that in Moreland we actually are low-energy users on average, because we have got smaller homes and more generally smaller blocks, smaller homes. There is actually a lot of potential to target big energy users, so people who have really big bills will make a really good priority group to aim programs at.

Business program – how are we going for time? I'm running really short. Just with the business program – essentially we work mainly with small businesses. We have been running a program with dollar-for-dollar retrofits, and I will tell you a bit about that soon. We have aimed some at sectors that use a lot of energy. Small business particularly has a lot of barriers. This is one of the reasons they are often put in the too-hard basket to work with in terms of energy, along with a lot of other sustainability issues. In terms of finances, they have real difficulty with up-front costs. Often $1000 can be very big for them to invest in their own business. So they can maybe get low-cost things but they don't get much of a return on low-cost measures, so it is not really desirable. Sometimes there are things that they need to do that is high cost, but the return is not very big either, so they will not do those things at all. For a lot of businesses, electricity is not their biggest cost so they are not going to go into a list of priorities. Often a lot of the equipment can be hard to retrofit, so often things like refrigeration – don't get retrofitted. Again we have the thing about leased premises and no energy standards for new buildings, but from business – things like how they use their time – how much time they have, their routines, how motivated they are, are all really critical to us as to whether they will do something or not.

A project we ran on behalf of six councils is Business Energy Action, which involved a number of

elements, but I think one of the key parts of it was we had a budget to offer businesses dollar-for-dollar retrofit funding. We do an energy audit and we say to them, "If you do this action, we will give you half the money to do that change." And we have actually saved 352 tons per year through that project.

The CHAIR – Where did you get the money?

Ms ABRAM – That came from the state government grant from the community action fund. So with this particular case study, Dairy Queen is a cafe ice-creamery. They had lots of small inefficient fridges and 20% of their energy came from that. We allocated some funding, which was the cost of a new coolroom – it was a $20,000 coolroom – we allocated $1700, and that really made them do it – that sort of incentive was critical to them making the change. They saved $1600 on their bills every year and 20 tonnes of greenhouse emissions, which is excellent, but it is a high capital cost for a long payback. It is a 12-year payback, and there is no way you would get a business to do that without offering them an incentive like that. There are their new fridges and coolroom, which they are really happy with because they will make savings on their bills every year.

We have demonstrated you can actually get local government and others involved in reducing energy from small business. It is actually an approach that lends itself to being done at a community level, and having funds really does increase your capacity to get businesses to act, but even having funds will not get every business to act. We audited 35 businesses and we did 12 retrofits – some of them there was not much you could do because of the nature of their business and others the things that you could recommend to them were going to be far too expensive or there were other conflicting things that made them not want to do it.

I have been asked specifically to talk about community power. This was a buyers group set up by Darebin City Council, the Moreland Energy Foundation and the cities of Yarra and Melbourne. We are the first of our kind in Australia and are still the only one in Victoria. How we reduce greenhouse gas emissions is by getting people to sign on to an electricity contract where they all get a small component of green power. They can have as much green power as they like, but everyone gets a small amount, and we encourage them to reduce their energy usage. We do things like free energy audits; we run seminars and send newsletters telling people how to cut their energy bills instead of telling them to buy new big appliances. AGL is the retailer that provides it. We have had a lot of difficulties in getting this particular project up and running. At the moment, the market is not really conducive to buyers groups; the retailers are not really interested in buyers groups. There has been a number of buyers groups that have tried to set up but have not had any retailers put their hands up to work with them. But they are really important because they have the potential to really provide innovative energy services, so there are changes that are required in terms of regulation, in terms of how to create a better environment. We have actually distributed our submission, which came out in a workshop we ran with other buyers groups, and that gives you a better idea of what the issues are and what we recommend should be done about it.

Very quickly on low-cost measures, because this is part of your terms of reference: any regulatory change can be low-cost, so often that is a really good thing to do because you get such an incredible amount of benefit. The five-star energy rating standard is a good example, it will provide massive amounts of benefit to the community in really locking in better building design, which we could never have done if we tried to take a voluntary approach. Also energy measures result in savings, so this is the potential for creating rolling funds. If you invest a bit of money into saving energy then the money you save goes into more energy savings. Economic growth can be stimulated by energy efficiency. That was very much demonstrated by the five-star energy ratings, that there were going to be a whole lot of other benefits that came to the state. Your high-cost measures can deliver much better energy and greenhouse savings like the Dairy Queen example of putting in the new refrigeration was much better than changing over their light bulbs, which would have been a low-cost measure. Good materials are essential, so we do need to have people out on the ground working directly with the community to really make this happen.

So I have just quickly put together some ideas of how you can integrate government and community in terms of making this work, so with government providing materials and resources, policies and programs and regulation, providing funding through grants and also best practice initiatives where they can actually get some development around new ways of doing things, which is really important with energy. With community and also local government actually directly doing the delivery, providing innovation and local solutions to problems and providing that feedback to government so we can continually improve our approach we take on reducing energy and greenhouse emissions.

I was just going to say in terms of measuring success it is actually very difficult to measure greenhouse emissions and what your success is there. A lot of the low-cost measurement approaches where

you say, "I gave this person a compact fluorescent, that means X-amount of energy saved". We can see from the Home Energy Stars that is not necessarily the case, but it is very expensive to try to work out what impact you are having. We do need some resources to bring together the different approaches that different organisations are using at the moment to develop a bit more of a cohesive methodology. In terms of recommendations, look to the new water package; there is some stuff in this that could be duplicated for energy. The tariff structures, for instance, is a really good way of going about it, building in disincentives for waste without social disadvantage, providing incentives for water efficiency and constantly reinforcing to people the need to do something and what to do. That is partly through the rebate incentives that have been provided.

In terms of my recommendations, I have talked a bit about energy ratings, whether they should be extended to all buildings and major alterations. We would like to see an energy-efficiency rebate program established for householders. In the written submission I have got some more detail on how that particular program would work. Advertising energy efficiency on rent and sales so people know when they are going to rent or buy a house what the energy rating of that home is, so you start to create a market for change to occur. Regulating against declining block tariffs for electricity. More funding available on a statewide basis for small business retrofits, so that dollar-for-dollar approach. Developing an energy services sector: it is really important that all the companies and the operators who do thing that fall within this sector don't operate as a sector at the moment – it would make a lot of difference if they did – it would lead to better standards in place and more accreditation. We also put forward a proposal for a small to medium energy enterprise energy efficiency best practice program to replace an excellent Commonwealth program wiped out about a year ago – the Energy Efficiency Best Practice program where they looked at particular sectors and said, "Let's make this sector really energy-efficient". They looked at bakeries, for instance, and developed a whole range of approaches that you take to make a bakery use less energy. That sort of thing on a state level would be very appropriate.

Education: having a sustainability program in place and having more resources available for schools and rolling out that fund idea again. They are my concluding comments, but I think that is fine.

The CHAIR – Thank you, Esther; that was really interesting.

Ms DUNCAN – Advocacy to whom? You said you worked with various companies.

Ms ABRAM – Advocacy to government. There have been a number of state government processes now. For instance, there is a greenhouse challenge for energy process; there is also a national framework for energy efficiency that has been developed, so we are participating in those programs. Energy retailers – mainly AGL through community power – we tried to use that as a way of getting leverage into the company to actually start to give them ideas about different ways of going about doing things.

Ms DUNCAN – Can I say it is a fantastic program the City of Moreland is providing. I suggest if you are looking to go elsewhere, you are welcome to come up to the Macedon Ranges any time – and where people just do not have access to gas – everybody is using electricity, and we have electricity bills like you've not seen. We have struggled to get an energy audit done. People struggle to get an energy audit done and struggle to understand what tariff they are on, so that is why I think we need some transparency in tariffs, and some choice.

Ms ABRAM – There are some really big issues around regional Victoria especially if you don't have access to gas.

Ms DUNCAN – You are welcome at any time.

The CHAIR – Thank you very much, Esther.

Ms COOTE – Thank you, it was really interesting.

Witness withdrew

C O R R E C T E D V E R S I O N

ENVIRONMENT AND NATURAL RESOURCES COMMITTEE

Inquiry into Sustainable Communities

Melbourne – 6 July 2004

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Witness

Professor I. Rae, Technical Director, Australian Academy of Technical Sciences and Engineering

The CHAIR – Thank you, Ian, for coming in today.

All evidence taken by the committee is taken under the provisions of the Parliamentary Committees Act and is protected from judicial review. However, any comments made outside the precincts of this hearing are not protected by parliamentary privilege. All evidence is being recorded, and you will receive a proof version of the transcript within the next couple of weeks.

We have been having people present to us, and then taking questions, if that is okay with you.

Prof. RAE – Yes, I expect that. Our academy is one of four learned academies in Australia. The other three are the Academy of Science – I don't know if you know about it, it is the domed building in Canberra, the oldest and perhaps best-known, and then there is the Academy of Humanities and the Academy of Social Sciences. We work together with them from time to time. Each of those academies elects people on the basis of their achievement in the sector they represent. Our sector – technological science and engineering – elects people to fellowship who have been technologists and scientists in basically the applied areas. So the sort of people's names you might recognise are people from the mining industry like Arvi Parbo, people from the biological world like Gus Nossal. The current chief scientist, Robin Batterham is one of our Fellows, the chief scientist of Rio Tinto, the company he half comes from. But there are various people like Jim Peacock in genetic engineering and Peter Hudson from Biotechnology Victoria – lots and lots of people – John Langford, who was until recently the head of Water Services Australia – now a Melbourne University professor. These are the sorts of people we elect to the Fellowship. We have 650 fellows, and it is that fellowship that I can draw on to get expert advice and to compile reports and make recommendations. We do that in a number of ways.

One of our main objects is to provide independent technical advice to government and the community. Sometimes we are invited to do that. We have just helped to review a salinity-mapping project by the national dryland salinity program. We have also just finished a review of some aspects of the oil-recycling product stewardship scheme run by the Commonwealth Government, and we looked at the transition elements of that. That was a contract we bid for. In other cases we get money from the Australian Research Council based on proposals we make to undertake studies, and the water-recycling project is one of those. We proposed to look at water recycling in Australia, to survey the extent of it and to make a critique, to offer technical advice about where we think it fits into the scheme of things and where it might go. So that is what our report is all about.

I have given you the technical report. The chief author is John Radcliffe, a former director of agriculture in South Australia and a former CNO executive member, and one of our Fellows. We had a steering committee that guided the work very strongly. That included people from industry, people from government regulatory bodies, coordination by John Langford and people like Peter Cullen, who is well known as the head of the Wentworth Group, and who has a massive impact on water resource use in South Australia. We have also produced a community version, which has less technical detail and more photographs and is a little bit more accessible than the little book, but it does not water down; it does give figures and recommendations we are making, and contact details for where you can get the rest.

The once-through system has been a spectacular success in public health. It started late in the 19th Century in most developed countries, and involves collecting the water somewhere – we do ours in the catchments mostly, but it doesn't matter much where it comes from provided it is good water and we treat it and we make sure it is of a good standard – it goes down the pipes to the city, and it is all drinking quality. Any time you turn on the tap to wash the car, water the garden, hose down the drive – all the things you are not allowed to do – but to drink, using the toilet, to cook, it is all good quality, you don't need to worry. It goes out the other end through the sewage treatment works – ours in Victoria have been particularly good. The Werribee one is of international standard and is a spectacular piece of engineering. It has worked well, and still works well. Sydney, as you know, has had a lot of trouble with theirs, but they are now using a much better system. But that once-through system has been a spectacular success in public health. We can no longer afford to do that; it is simply too wasteful of water to provide that degree of assurance. But it is very difficult to step back from it. We have all become used to having that degree of assurance; you don't have to worry – turn on the tap, it will be okay. Any move away from that means you have to use more judgment about how you use the water. That is proving to be more difficult in places in Victoria where recycling has become more prominent.

Recycling technically can be taken to a number of stages, and we can quite easily bring water back to drinking water quality; that's not a problem. It costs money, and the original source is so cheap that it is

very hard for schemes like that to compete. We found that a number of schemes that had been instituted with totally artificial prices were finding it impossible to get the price up to a realistic level. There is only one that has a realistic level and that's in South Australia south of Adelaide where the local farmers did it themselves; they bought the water from the Sewerage Authority and stored it in the treatment plant and piped it up to their properties. They pay a realistic price; they are the only ones, all the others are artificial.

Ms DUNCAN – Artificially low?

Prof. RAE – Artificially low, yes. Provided the other water stream is low it's very hard to get into the market, and it is untenable to say you should put up the price artificially to make recycling easy. I don't think that is believable or is going to happen. You are the politicians, but that's your job.

Looking at the schemes that are around, we found a lot of greywater schemes being installed in new developments. They are very hard to retrofit; re-engineering a suburb to put in a purple pipe to recycle the greywater is probably not on, and we didn't think it is a good idea for people to do it in their own houses. It is technically very demanding and even if the owner of the house right now is technically able to deal with it, chances are when it is sold the new owner won't be. There are half a dozen houses in Canberra we had a good look at, but we don't think that's a good thing to do. But where you've got a large building being occupied by offices or apartments and you can afford to pay somebody and buy the equipment, then we think that is a possibility. There is one being built in St Kilda which has its own recirculating system, and of course there is the famous 60L building in Leicester Street in Carlton, where ACF and a number of other groups work, where they do as much recycling as they possibly can. So they are showing what can be done in a complex where everybody bands together, in a sense, to meet the cost.

There is resistance to taking recycled water back to drinking quality and drinking it. They do it in Singapore, and we bought some water from Singapore to show off so that we could all drink it up on the stage, but I forgot to bring it today to hand it out to you!

The CHAIR – Thank you for that!

Prof. RAE – You may be pleased about that. But they do it, and people accept it, and there is no problem. In Australia there has been a great reluctance to accept it, and we suspect that that is going to continue. That is not going to change easily, but there are lots of other places where drinking water – at least drinking water quality - is not needed, and recycled water that is not even at drinking water quality can be used – they are industrial uses. There is one very large one in Brisbane where something like a quarter of the output of a sewerage plant goes to an oil refinery and is used as the cooling water from the oil refinery. I know that Victoria has been planning to shift some across to the Latrobe Valley, again for industrial uses. There are lots of minor industrial-type uses where water is put out on to parks and golf courses and football grounds. They mainly tend to occur around inland rivers, so places like Rutherglen and Yarrawonga right down the Murray recycle a lot of their sewage out into public parks and that doesn't cause any fuss – in fact it is welcomed by the people – and Wangaratta is looking seriously at a plan to do the same thing there.

I think that focuses on something we would like to say, and that is that smaller-scale versions of that sort of recycling probably are easier, or at least more possible than complete retrofitting. Flemington racecourse has started sewer mining so that they have got a guaranteed source of supply for their racecourse. The Altona Golf Club is buying water from the Altona Sewage Scheme; they are paying more than they would for water out of the tap, but they know they have got a secure supply and that the sewer will always be running. And when City West Water or Melbourne Water say, "You can't use water on your golf course" they'll be laughing, so they have looked ahead. But those sorts of schemes are capital-intensive enough that they can be done. You could even do them in suburbs.

In the drier parts of Melbourne – and I live in the western suburbs where it is dry – it is perfectly feasible to have a local water-recycling scheme that does not attempt to re-pipe the whole city, but it re-pipes parks and gardens and other water courses that we like to see flowing in our city. I live in a housing estate where there is a stormwater lake. All the stormwater goes down into the lake and runs through the reed beds, the classic passive treatment of water, and flows out to sea just occasionally when it rains a lot – although it hasn't happened much recently.

Mr DRUM – And do they use that water, Ian?

Prof. RAE – No. It is not used; it is purely recreational. It has a massive birdlife, so it is a huge amenity for the area, but it also takes the pressure off the local drains and ensures that the water doesn't flush straight down

into the bay. There is a big litter trap that is cleaned out once a year or so to collect what does go down. And, as I said, the reed beds are there to provide biological chemical purifications, so the water in the lake is very good quality.

Mr DRUM – Are there opportunities to capture stormwater and re-use our stormwater on our recreational fields?

Prof. RAE – Yes, I think there are, but you have to be a bit careful because stormwater plays a number of roles and it is not entirely clean. Melbourne is famous for its first-flush faecial contamination of stormwater. I used to think it was dogs, but I am now told by EPA that "No, it's birds". Bird droppings are the major source of faecial contamination. It hits the bay – when it rains in summer the message is stay off the beach for a day or so; it will cleanse itself, but not quickly. We also pointed to the fact that most of the water schemes we looked at are run by individual authorities. Somebody looks after water supply, somebody looks after sewage, somebody else is getting into recycling, and we think there needs to be an overview of that. It probably needs to happen at state level rather than Commonwealth level, but an overview is held of all those water sources we see – rainfall, stormwater, recycled water – all that is part of the same resource. I think you could add desalinisation, because Perth is just about to get into desalinating water. The Israelis now do it for 40 cents a kilolitre, and it is becoming competitive with other sources of supply where those sources are not too good, in Perth and Adelaide. And you can probably add groundwater, although it is not a feature in Melbourne but it is in Adelaide. They get 10 per cent or so from groundwater, and Perth gets nearly half from groundwater. So having an overview of where all those water supplies might come from could actually have an impact.

This is part of the proposal I am writing for next year's study on how we run our water storages, because at the minute we are looking at water storages that are very large because they only work on spasmodic rainfall. And as the rainfall seems to be getting more spasmodic serious consideration is being given to making the water resource storages bigger – and there are massive environmental oppositions to that, of course, not just here but everywhere else. One way to ensure a better supply is to put some recycled water in, but there is a lot of resistance to putting it back into the drinking water system. We have engineers in our Academy who say that the best way to do it is to put it back in the groundwater and then tap off the groundwater at some other point, so effective cleansing goes on there. We haven't explored that very much, but we do have some enthusiasts for that sort of thing. But that would mean that we don't need such big reservoirs because, as I said, the sewer is always going to flow. The idea is to capture that water and put it back into the system. At the minute we are urging that it be used to replace drinking quality water where that quality is not needed, not to start new ventures. So with respect to Werribee we are very pleased to see it being used on the Werribee horticulture area, but not mad about seeing it used to start new developments out on the plains. We think that is wasteful. They are the sorts of things that come out of a study like that and go under the heading of critique. We do the survey, the figures; all the numbers are there, the costs, volumes and who runs it. There are some beautiful photographs in here of recycled water schemes. One is of my favourite vineyard in Ararat – I didn't know that until I spoke to Grampians Water – they gave me the photograph – and there are some in Shoalhaven. There is a very big scheme in Shoalhaven, recycling water mainly used for dairy production; that is used to raise grass that cows eat. We have a shot in there of cows feeding on the grass with a big spray boom going, so there are lots of things you can do. Technically it is not a problem; economically it is bound up with cost of water and artificial pricing of recycled water. Politically it is bound up with the acceptability, which we think can be tackled by using the water for horticultural and agriculture uses rather than wanting to drink it. They are the main core findings.

The CHAIR – Questions?

Ms COOTE – Yes, I have a couple of questions. Sewer mining is something that I noticed when you were speaking, and looking at this briefly, the sewer mining in Albert Park. Could you give me a bit more detail about that? I actually have two questions – that, and something about Werribee, if that is okay.

Prof. RAE – Sewer mining is effectively filtering the sewage to make sure that what comes through is nothing that is going to hurt you, and that is technically possible; it costs a lot of money but it can be done, and it can be done on quite a small scale. So you can generate just as much as you need. There are still worries at the end of it that some of the chemicals in the water that can't be filtered out because they are dissolved and may be harmful. They are sometimes synthetic chemicals that we have used as pesticides or drugs. When we take drugs we pee out a certain amount of them, it does not get destroyed in the body and there are natural substances that we excrete as well, they pass through, and so some sort of chemical treatment is needed if we want to deal with those problems.

Ms COOTE – The sewer mining in Albert Park, is this for the Albert Park Lake?

Prof. RAE – No, it was used as a demonstration process.

Ms COOTE – Because Albert Park is filled with potable water, which is such a waste – hopeless.

Prof. RAE – Absolutely hopeless.

Ms COOTE – Could you tell me a bit more about Werribee, because I know there is controversy about Werribee at the moment and the level of the water being treated, as to what it can be used for? Can you just clarify it for me, because I am really very confused?

Prof. RAE – I should tell you I am an organic chemist by training. I spent most of my career in the laboratory and then as a dean of science in the chemistry area, but yes, I can tell you about it. The sorts of chemicals I spoke about from sewer mining are the sorts of things that might come out of the sewage treatment plant anyway. They are by and large destroyed in the soil, and they never find their way into the food, so you don't need to worry about that. That is the sort of worry that is being expressed at Werribee, if there are tiny concentrations of progesterone or ampicillin, or something similar, and I put the water out on the soil: is it going to get on the cabbages? The answer is no, it is not a problem.

Ms COOTE – So when you talk about what they are trying to do at Werribee – and I mean there is a big deal that is going on somewhere –

Prof. RAE – Deal was the name of the game.

Ms COOTE – And when you say they are taking it out, where are they trying to take it?

Prof. RAE – At the minute it flows out from the Murtcalm outlet from Werribee. They collect the methane and burn it to get power, but at the end of the day there is water going out into the bay. The main contaminant is nitrogen – the nutrient that can be used by things in the bay, as with most sewage outlets – but that water can be used in agriculture. And it's that water that is being spoken of as source water for irrigation in an area that has mainly relied on groundwater and the Werribee River with its small storages upstream.

Ms COOTE – And do you have any problem with this water?

Prof. RAE – No.

Ms COOTE – So you would be happy to use it on the cabbages? So what's the problem?

Prof. RAE – It is partly a lack of confidence. I have a PhD, 40 years experience and a degree in chemistry. I used to have a white coat – I don't have one any more – figuratively I have got a white coat. So if you talk to me about the chemistry that is going on in there, I can size it up myself and say, "Yep, that is not a worry, I understand about that". But if you talk to somebody in the horticulture area who may have left school at 14, is an expert horticulturist but knows nothing about organic chemistry, they take a more cautious approach – maybe rightly – and they may say, "I am worried about this". That is what is going on.

Ms COOTE – Thank you.

Ms DUNCAN – Are you saying that we should be using more recycled water for drinking?

Prof. RAE – We are saying it is technically possible to do it, but we worry about the acceptance we would need to gain.

Ms DUNCAN – Because given that we drink less than 1 per cent of the water – so this is the least use of it – is it not a better thing to say you could use recycled water for almost every other function in your household and you could just get your drinking water from your rain tank?

Ms COOTE – But you've got all those bird droppings on your roof!

Ms DUNCAN – They haven't done me any harm.

Ms COOTE – That's what you think!

Prof. RAE – You have to put in a very large tank to make an effective contribution to anything but drinking, as you

probably now.

Ms DUNCAN – How big?

Prof. RAE – In Melbourne you would need at least 10 000 litres, and probably more, because the way we use water in the city –

Ms DUNCAN – Just for drinking, or 6000 for everything? I don't run out of water.

Prof. RAE – You are more frugal than the average person in Melbourne. But the idea that you can put a tank in your house – and I know this is new government policy with new houses – you need an awfully big tank to have an impact. I have a friend who works in the same environment group with me who installed a 2000-litre tank and it filled up last month and he doesn't know what to do now.

Ms COOTE – Sell it – $1 a bottle!

Prof. RAE – We recycle our washing-machine water – that is our biggest concentrated use of water – and a bit from the shower. We didn't think we should replumb the house. We are a flat block with a slab and we couldn't easily get it out – some people with a slope can. We bought a large black pipe from Bunnings, and we run the washing-machine water into that. The pump is not powerful enough to pump it into a small pipe; it has to run in a big pipe, and then either my wife or I walk a hump along the pipe to pump the water out onto the garden, so we have got a nice green backyard.

Ms DUNCAN – But you've got to be there when you do your washing?

Prof. RAE – No, only once a day you do it – or wherever you wash.

Ms DUNCAN – That is what I mean.

Prof. RAE – But you mustn't store that water for very long, because it has soap and body traces. Without children it doesn't have much faecial stuff, but with small kids your washing water has faecial contamination and you have to be pretty careful of that. So you wouldn't want to put it into a communal pool. There are interesting problems, and, as I said at the beginning, the once-through system has been a spectacular success, but we can't afford it any more.

Mr DRUM – I am interested in the debate about if we start to recapture our stormwaters, obviously that is water that would otherwise drain into our river systems.

Prof. RAE – That is right, yes.

Mr DRUM – Certainly coming from Bendigo – and we are on stage four at the moment – I think we have a real desire and an argument for capturing that water in the Bendigo region and re-using it there. The fact is if 20 per cent or 30 per cent or 40 per cent of that rainfall doesn't reach the Murray system, so be it, but at least we are able to save all the drinking water by watering our racecourses and our golf courses and football fields, and so forth. I think that would be a good result.

Prof. RAE – You are starting to talk triple bottom line without really using that language. But you are saying that looking after the environment may not be the only thing that is important; it may be that you need to balance up these three things. You can't have it all; you are going to have to balance up what you do. That is true of all sorts of environment-type matters – I am trying to the to use the word 'compromise' but you do need to triage a bit and say, "This is more important than that, therefore this will get some preference" and that is what has been going on in a number of different areas if you look at that view, that way of analysing things with what is going on in the Murray. People are saying, "Yes, we know there are all sorts of things we want to do in the Murray, but there are other users, other beneficiaries and we need to consider them. We know this is good for the environment but we are not going all the way."

Mr DRUM – So therefore to actually put that into practice we need some governing body that is going to actually have the power over the larger developments, because when someone wants to build six houses down the road it is not really worth putting in place a special rainwater system for six houses. But if you are building 600, then we have to be careful sending that water down the Bendigo creek and then down the Kow Swamp to Leitchville and it eventually find its way into the Murray. It is the larger developments going up around Bendigo, because at the moment we are not capturing that stormwater and yet we cannot run the races, we cannot play football or soccer or anything because our grounds are so dry.

Prof. RAE – That is interesting. It is happening around Melbourne, of course. The big development north of the city, the Aurora development is planning to do quite a bit of capture from the Merri Creek. I think that comes out of the Craigieburn sewerage treatment works, so there is already a balance going on of the minimum in the sense of keeping the creek alive with this matter. That is a worry.

The CHAIR – Thanks very much for your time, Ian.

Ms COOTE – It is all very interesting.

Prof. RAE – I have a lot of fun as technical director!

Witness withdrew

C O R R E C T E D V E R S I O N

ENVIRONMENT AND NATURAL RESOURCES COMMITTEE

Inquiry into Sustainable Communities

Melbourne – 6 July 2004

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Witnesses

Dr E. Palombo, Research Academic and Ms L. Dunn, Research Academic,
Environment and Biotechnology Centre, Swinburne University of Technology

The CHAIR – I welcome Dr Enzo Palombo, research academic, and Louise Dunn, also research academic, from the Environment and Biotechnology Centre, Swinburne University of Technology.

All evidence taken by the committee is taken under the provisions of the Parliamentary Committees Act and is protected from judicial review. However, if you make comments outside the precincts of the hearing, they are not covered by parliamentary privilege. All evidence is being recorded, and you will see transcripts of the proceedings in a couple of weeks.

I think you sat through a couple of presentations, so you understand. If you would go through your presentation, we will then ask questions.

Overheads shown

Dr PALOMBO – It has been quite an educational time. Some of the areas of discussion overlap with what we are involved in. We are from the Environment and Biotechnology Centre – a couple of the academics involved in the teaching and research program at Swinburne. We are part of the School of Engineering and Science, and our centre has evolved from the academic interests of a number of members of that school in originally the chemical sciences area. So as I will mention on the next overhead, we are quite a diverse group of academics and other individuals. We have backgrounds in a number of areas, including chemistry, biochemistry, biology, genetics – recently with Louise's involvement – public and environmental health. And given that the school we come from is engineering and science, we also have a couple of engineers in our academic mix, which provides another outlook on some of the research activities we undertake. We have dedicated researchers in our group. We work closely with our students at the undergraduate level, so we have a number of students who undertake project work and honours project work at a higher level. We also have postgraduate students at both the Masters and PhD level, as do most university departments now. We collaborate widely within our own university and with other universities within Victoria. Interstate and internationally we have a very strong industry focus. CSIRO is one of our collaborating partners in many of our research programs. Of course we have many industry partners, and given our background and our university of technology status, we do have a strong industrial focus on our research and our teaching – and it has been very much an applied focus. So that is where we come from – this sort of background – and we have a number of projects that fit into the theme of the environment.

This overhead is meant to give you an overview of some of the areas that we undertake in teaching and our research activities within the group. The ones in green – a bit hard to choose, I suppose – are the ones which are of probably more direct interest to this inquiry as some of the areas that we are involved in do impact directly on environmental issues.

We also have, of course, public health, public and environmental health issues. Louise will speak more about that towards the end of the presentation.

I have mentioned that we have other wide areas of interest which impact somewhat on the environment, particularly this area here – bioactive compounds – where we are trying to discover new particularly medicinal compounds – drugs from native plants, for example. Of course, that raises our awareness of these plants and the need for conservation and biological diversity. The areas of real importance are things like biodegradabiliti, water quality – which overlaps what Ian spoke about in the last presentation, which was good to hear – a strong focus on biodegradable polymers. From our background in chemistry and synthetic chemistry, we have designed a number of polymers that are truly biodegradable and have implications for things like shopping bags and other polymers – the plastics we use in everyday life. With our engineering colleagues we have some area of expertise in landfill engineering and trying to find more environmental ways of making sure our landfills are behaving themselves.

To the area of biodegradable polymers – the centre has a very well-advanced and well-recognised testing facility for biodegradable plastics– probably the best one in the country. The centre was one of the main research drivers behind a spin-off company from one of our research programs called Plantic, which is now marketing its product into Europe; it is basically biodegradable plastic based on what is known as starch polymers. So rather than use your synthetic chemistry, you are using organically based, naturally based organic molecules that dissolve in water. So you might have your typical packet of Tim Tams, you have the insert which is plastic, it gets thrown away in the bin, takes years to break down; we have developed an organic biodegradable version where you add water and it will dissolve in 20 or 30 seconds, so a much better environmental product than your typical plastic. We have also been involved in developing the plastics standards for Australia, in terms of biodegradable and environmentally degradable compounds. One of our academics has recently appeared before the ACCC hearing into biodegradable plastic shopping bags and developing new

technologies for mulch films – essentially PVC films you can use as mulch but that will biodegrade over time – so again, another environmentally friendly product.

In the area of bioremediation we have had a long history of support from Visy Industries. The university's first chancellor was Richard Pratt. His company, obviously, is very interested in recycling – particularly things like paper and getting rid of the wastewater and the inks from recycled papers. We have developed new technologies based on biological systems to do this. In the same way these technologies have been applied to the biodegradability (verify) of many industrial dyes which normally end up being washed in the rivers, and other nasty things like that. Currently we are helping a company known as E-compost develop a self-aerating compost bin which is much more greenhouse friendly; it doesn't yield the nasty greenhouse gases that some domestic compost bins can generate if you don't do your composting properly with aeration and other forms of allowing air to get to the compost bins.

In the area of water quality, we have a number of research programs that cover a diverse interest in water quality for drinking waters. We have research programs looking at the quality of drinking water. Our engineers are very interested in the infrastructure of pipes in Melbourne, and we have a number of projections looking at those sorts of things – and recycled water. As Ian mentioned in the last presentation, that is an important area for this part of world along with looking at sustainable and smart housing. Again, the engineers are involved in some of these projects locally to obtain these. Our industry partners are varied. We have water providers such as Melbourne Water, South East Water and South Gippsland Water to provide a lot of the funding for our research programs, and we are involved with some of the developers – Docklands Authority, Devine Homes and Australian Homes –who are getting into funding. Through them we aim to develop particularly the recycled water facilities. Recently we have been funded with the help of Massoni Wineries, down on the Mornington Peninsula, to develop a water desalination program for use in that particular application.

Quality of drinking water – in some of the projects we undertake we are looking at the sediment – or the turbidity or the cloudiness that is sometimes apparent in domestic tap water that is often a concern for consumers. We are looking at how this can be prevented in people's domestic drinking water. We are looking at things such as how bacteria can associate with particles naturally found in the water, and at how this association can protect them from chlorination, which has very important public health implications. Our engineers are involved in pipe infrastructure, looking at things like the maintenance of the pipes, the rehabilitation of the pipes, and predicting how well these pipes will perform using various computer models to monitor the flows of water through the pipes.

Large area recycled water and greywater and other water re-use – we have established the first dedicated greywater laboratory in the state in which we are investigating the chemical and biological safety of recycled water – particularly, again, for domestic users who may not be experts in how to maintain the functioning of the domestic greywater system. We wish to investigate exactly whether these are of any significance to domestic users.

Our engineers are involved in stormwater research in urban design. I mentioned before we have some projects in the area of desalination with Massoni Wineries. These are some other areas that our engineers are involved in, in terms of looking at smart sustainable housing with respect to water. They are some of the issues there – structural, adaptable, energy efficient – and of course water conservation is a main thrust of that research.

Landfills are another big environmental issue. We have a number of engineers working on modelling landfill decomposition behaviour, what happens in landfills. It is very much dependent on a number of factors. As you can see here, it involves both engineering and biology. The big area is the situation with gas generation, landfill generated onto the gas, the decomposition of the material there and one of the big ones there is methane, a greenhouse gas – how can we capture and use the gases emitted by the landfills in an environmentally friendly way? That also has an industry partner involved, Energy Development Limited.

Some of the things that we have identified as being impediments to the uptake of these new technologies by the public – of course, we always complain about insufficient research funding, and that is a typical university call, so there is nothing new about that one. We always wish we could obtain more funding, but that is going to be with us for years to come, I imagine. Two of the important points are that within the university system and within the biotechnology system in general the areas of environmental biotechnology have been less recognised by these two communities. Most people focus on the medical biotechnology. We are well aware of the wonderful things we do in Melbourne and Victoria with medical biotechnology. The government has been fantastic in supporting those schemes. Environment has almost been neglected within this whole discussion in terms of the biotechnology community. We are all aware of stem cells, cochlear, cancer research, but in terms of environmental

biotechnology there seems to be a hole there in people recognising that, so we feel public awareness of this area should be greater.

Once we develop products at the university of level we need funding to commercialise these. That is where further funding would be useful – some sort of way of improving community awareness – coordination of this whole field in Victoria: does it require a specific government agency? Do we need more industry support? These are some of the areas that may develop further. I will pass on to Louise now, who will speak about some of the other issues – particularly with respect to public and environmental health – or I am happy to answer questions now or hold them to the end.

The CHAIR – I think we will go straight through and take questions at the end, if that's okay.

Ms DUNN – I manage the undergraduate program in public and environmental health. We are involved in providing a work force that includes people working in local government particularly – those working as environmental health officers, management, health promotion and waste management. We also have (indistinct) the course by the Australian Institute of Environmental Health, and given the area of your inquiry as well, my background also involves working within local government. I am involved in community education and recycling programs, health promotion, et cetera, which started off probably about 10 years ago – when I moved into this academic field. I have had direct experience in working with communities as well.

In terms of looking at our participation rates in a range of conservation issues, I thought it might be worthwhile to look at that time impact of sustainability and health in local communities. There is a growing recognition of how we need to address and understand how our health and the environment work together and impact on a healthy environment, in the same vein as the current strategies looking at the physical, cultural and economic, environment and how that impacts on our health status – things like looking at the different education levels of the community when we are trying to promote and change behaviour and trying to get people to take up different services and motivate them to change.

In terms of skills and practice of people working in the area, a real movement towards evidence-based decision-making and creative supportive environments – all the sorts of words you hear thrown around – but generally what it is saying is that we need to actually look at why we are doing certain things – particularly in our regulatory environment – to support the health of our communities, because if we don't have a healthy community it is very difficult to get people to focus on the environment as well, if their health is suffering. We need a chicken-and-egg approach and we need to recognise that impact as well.

In terms of engaging the community more in these behaviours, there is a need, as always, for greater research, particularly in evaluating programs as well, what is effective – we are currently developing training for people working in the health sector around evaluation. I think if it is a big area we need to look at to see how we are getting the benefits of what we do out of our range of programs, and obviously funding for that as well.

Principally what I think might be useful to have a look at is the municipal public health planning framework – I am not sure if you are aware of the framework as such, but I think it is another way of examining opportunities to actually participate in increasing our participation in these programs. There has just been a review of public health planning, and I have been involved in developing a few public health plans within local government. What they have actually done is moved into these four key areas we need to look at, which include the natural area of water quality, waste management and energy consumption. This is an opportunity for a framework within that local government area to try to get people to recognise where they can sit their programs, rather than having a public health plan working on its own trying to get other areas within waste management – for example, programs that are identified through eco-recycling, regional waste management groups, local issues that identify, and to use that framework a little more to try to bring it together. We do tend, sometimes, in local government to have groups running in certain sectors and other things running outside, so it is probably a worthwhile framework to have a look at that impact. Again, implementation of public health plans – who is actually going to implement them in local government? There is always a cry for pressure to be put on there from state government to implement these plans and to develop the programs and run them through the communities. But it is a way of trying to identify what the key issues are, because where do we start in terms of energy and transport? There is just such a wide range trying to home in on different areas.

Just an example perhaps within that framework – wastewater management is coming up all the time, obviously. The implications of greywater management – and I think it has been highlighted a couple of times today – suggest a need for a greater understanding and guidance in this area, particularly at

the statutory level. Environment health officers working with local communities do have concerns about the guidances out there for the public, and an understanding of how to use greywater properly, the potential public health hazards that may arise for people not using greywater responsibly or not enough information about the microbiological quality of the greywater, and the need for strong development of educational materials in that area. Consumers lose confidence if they are contacting local council wanting to use greywater and there are guidelines that are not there that are provided and are clear so they know what to do, and there is some sort of responsible management of it – so greywater is a significant issue in that framework as well.

The CHAIR – Thank you. Questions? Damian or Jo?

Mr DRUM – So you think maybe we need a statewide clearer regulatory framework as to what we do with our greywater, rather than leaving it up to individuals at the moment – or even communities, or even suburbs? Let's just get a clearer definition of what we should be doing.

Ms DUNCAN – There are conflicting guidelines provided by the EPA and the Department of Human Services; there is confusion regarding the correct approach there, and I do think we need to look at that a lot more in-depth and at also the mechanisms put out as well, definitely for that.

Mr DRUM – Thanks.

The CHAIR – I was just going to make a comment on Plantic. We had someone from RMIT earlier today who actually showed us a slide of the pouring of the water, but that did receive government funding for the commercialisation project; is that right?

Dr PALOMBO – No. Plantic was a spin-off company of the cooperative research centre, which is a federally funded initiative, so the commercialisation would have been funded by the spin-off company.

Ms COOTE – Could I ask about desalination? You spoke about the Massoni Winery on the Peninsula, and you said they were developing a desalinisation program for themselves. What are the cost benefits of this? Is it expensive to be doing it on an individual basis?

Dr PALOMBO – It depends on the study. I think that is part of the study. The study is just about to start now. We just had funding for it approved recently, and it is into the implementation stage later in the year, but we don't have any data from that study yet.

Ms COOTE – Given that obviously commercial desalinisation is something that is not for this committee, because we are not looking in the industry-type sector – that is not in our brief – but certainly in household use or small areas, and objectively this winery would be an interesting example – in your opinion is it going to be prohibitively expensive?

Dr PALOMBO – Probably. I think the energy input to remove the salt would be –

Ms COOTE – Counteractive?

Dr PALOMBO – Yes, it is certainly not economically beneficial. But that might be for authorities to determine whether there can be subsidies for that scheme or if there is another way of making it viable.

Ms COOTE – So countries like Dubai, for example, that have a huge desalinisation program – and obviously cost is not a problem for them, which is a whole other area again – but given Victoria, and as Ian Rae said beforehand, we are becoming increasingly spasmodic in our rainfall – is it something that should be looked at? We are getting our mind around greywater now, and it seems to have taken us an awfully long time to get to this position, but should we be looking more innovatively at desalinisation?

Dr PALOMBO – Possibly. We have a very large coastline so the source of the water is not a problem. I see it as one of those things that would supplement other water schemes, probably never replace any particular scheme, but certainly if you were on a winery on the coast – as this particular one is – and you look out onto the bay and see all this water while on the other side is Bass Strait, certainly there might be some incentive for you to tap into that area.

Ms COOTE – I am looking at irrigation for cattle, and that sort of thing, which is now seen to be not the done thing at all, that flooded irrigation; but if it were able to be desalinised and put into some of those areas along the coast in parts of the Western District, Warrnambool, et cetera –

Dr PALOMBO – Again, golf courses, other recreational areas.

Ms COOTE – Thank you very much.

Dr PALOMBO – A pleasure. One thing about those comments – we deal with the next generation, if you will, the students – and certainly environment and these sorts of issues are high on the agenda of our student body. It is a very reassuring thing to know the message is getting through to that generation.

Ms COOTE – Yes, going out into the policy-making areas, it is horrific.

Mr DRUM – I am really interested in the fact you've been able to have some significant breakthroughs in breaking down some of those plastics, the polymers. Have you actually been able to make those breakthroughs yourself?

Dr PALOMBO – Which one?

Mr DRUM – You spoke about the Tim Tam liners, things like that.

Dr PALOMBO – The polymers that were used in that particular application were made by our research people based on starch, so something which is considered to be an organic chemical found widely in nature can be moulded into a shape and then you can just use water to break that down.

Ms COOTE – Is that actually happening? I don't actually buy Tim Tams because they are so delicious – I just don't buy them! However, if they are laid down on the table, I am the one who is in there – but is this happening?

Dr PALOMBO – From what I understand, Plantic have applied for European authorities to market that product into Europe.

Ms COOTE – So it is not happening here?

Dr PALOMBO – I don't think it is happening locally, not yet.

Ms COOTE – So I will not go out there and try to buy a packet of Tim Tams yet.

Dr PALOMBO – Of course there are limitations for the application. You can't use it for anything that is aqueous in nature because it will break down the product, but in those applications, sure.

Ms COOTE – Thank you.

Ms DUNCAN – We have that to an extent already, don't we? They look like white Twisties, and it is used for packing – and you think they are polystyrene, or something – but you can actually eat them. I presume it is cornstarch or something like that.

Dr PALOMBO – Probably an organic-based molecule.

The CHAIR – Thank you once again very much, and apologies once again for keeping you late.

Witnesses withdrew
Committee adjourned