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TRANSCRIPT OF PROCEEDINGS

PRODUCTIVITY COMMISSION

INQUIRY INTO WASTE GENERATION AND RESOURCE EFFICIENCY

MR P. WEICKHARDT, Presiding Commissioner

TRANSCRIPT OF PROCEEDINGS

AT BRISBANE ON MONDAY, 27 FEBRUARY 2006

Continued from 24/2/06 in Adelaide

MR WEICKHARDT: Good morning, ladies and gentlemen. Welcome to the public hearing in Brisbane for the Productivity Commission inquiry into waste generation and resource efficiency. I apologise sincerely to people, first of all for our delayed arrival due to traffic hold-ups and, secondly, the fact we don't at the moment have a court reporter. They are apparently on their way. We might get a disruption while they set themselves up over here but I think in the interests of time we'll proceed with the tape-recording that we have set up here.

My name is Philip Weickhardt. I'm the presiding commissioner for this inquiry. The inquiry started with a reference from the Australian government on 20 October 2005. The inquiry will examine ways in which waste management policies can be improved to achieve better economic, environmental and social outcomes. The inquiry covers solid waste and, more specifically, the issues associated with municipal, commercial and industrial, and construction and demolition wastes.

We've already talked to a range of organisations and individuals with an interest in these issues. Submissions have also been coming in to the inquiry following the release of an issues paper in December. We're grateful to the many organisations and individuals who have already spoken to the inquiry and are participating in these hearings. The purpose of these hearings is to provide an opportunity for interested parties to discuss their submissions and their views on the public record.

We've already had hearings in Canberra, Melbourne and Adelaide, and following this hearing in Brisbane we have public hearings in Sydney, Perth and a further hearing in Melbourne. We'll be then working towards completing a draft report for government by the end of May, having considered all the evidence presented at the hearings and in submissions, as well as other relevant information. Participants in the inquiry will automatically receive a copy of the draft report.

We like to conduct all hearings in a reasonably informal manner but I remind participants that a full transcript is being taken. For this reason comments from the floor cannot be taken but at the end of proceedings for the day I will provide an opportunity, for anyone wishing to do so, to make a brief presentation. Participants are not required to take an oath but are required, under the Productivity Commission Act, to be truthful in their remarks. Participants are welcome to comment on the issues raised in other submissions or by other speakers here today. Transcript will be made available to participants and will be available from the commission's web site following hearings. Copies may also be purchased using an order form available from the staff here today. Submissions are also available on the web site or by order form.

To comply with requirements of the Commonwealth occupational health and safety legislation, I draw your attention to the fire exits, evacuation procedures and assembly points. I am told that the alarm for evacuation is a beep-beep-beep here and the evacuation order is a whoop-whoop-whoop sound. Do not use lifts, and the evacuation is out to Chelsea Lane at the rear here, and wait to be escorted from there by a marshal. Can I ask the audience to please turn off their mobile phones or to turn them to silent, and I'd now like to welcome - first in this Brisbane inquiry - Mr Michael Kennedy. I'll get you just to say your name and give your position and organisation for the record, please.

MR KENNEDY: Firstly, thank you very much. My name is Michael Kennedy. I'm the general manager of Kennedy's Classic Aged Timbers.

MR WEICKHARDT: Okay, thank you very much indeed. I've read your brief submission. I hadn't seen your slides until I was just given a copy of them a moment ago, so if you wish to go through those then please do so. I think we've allocated something like 45 minutes for this session, so if you can try and keep within that and leave some time for questions, that will be appreciated.

MR KENNEDY: Thank you very much. Just a little about what I'm going to be talking about today, particularly my issues about timber and recycled timber. I'm going to be talking a little bit about the history of timber, very briefly, in Queensland; a little bit about Kennedys, about who we are and what we do. I'm going to talk about the current situation in relation to recycled timber: what currently happens, what the future situation is going to be like; some examples in America and also in Europe - what they do with their recycled timber; some of the impediments that are currently in Queensland on a local government level, state government level and an industry level; and lastly, to wrap up, we'll be talking about what the benefits are for Queensland - and greater than Queensland - for a greater timber resource recovery system than we've got at the moment.

Firstly, I think it's important we look back before we look forward. This is from a very, very famous forester - book that he wrote, Hardwoods of Australia. It's a quote that was taken out of there. It was relevant back when he wrote it in 1919. It's particularly relevant now. He was a very astute man and, if we have a look at that, we have a national asset with our timber that's currently in a lot of structures throughout Queensland and throughout Australia that we need to make sure that we handle or we manage efficiently, and manage that resource so that we look after it properly.

Australian timbers: we're very fortunate. On a world scale we have the best timbers in the world, without a doubt, and in Queensland we have the best of the best. We're very blessed to have a vast range of very, very superior timbers when we

compare them against any other country in the world. They've been used to construct some major infrastructure throughout Queensland and throughout the country: wharves, warehouses, bridges, power poles, sleepers, general construction. In fact we've exported them not only throughout Australia, our timbers, but throughout the world. Examples are the Suez Canal was built predominantly out of timbers from Queensland.

Okay, a little bit about Kennedys: who are we, what do we do? We've been doing this for about 80 years - timber - so we still make a lot of mistakes. We try not to make the same ones twice. We know nothing about lots of things but we do know a little bit about timber. I'm the third one in the family, third generation, to be doing it and my wife is expecting our fourth child very shortly so we're hoping one of those will be the fourth one. It will be very nice. We evolved from my grandfather. He was in boatbuilding, cabinet-making. Father had a bush sawmill in northern New South Wales and I've sort of taken on board that and moved on from that. We've been specialising in recycled timber since 1995, so we're into our 11th year this year. We've seen a lot of positive things have happened since that time.

Our business: we're about value adding and reclaiming waste wood, looking at that resource and making sure we can use it efficiently. When we started doing this, people thought we were mad. Probably some people still think we're mad but we have an enormously valuable resource out there that is still not being used effectively. We've started, we're getting better, but there's still an exponential amount of growth for us to improve on. We have a showroom down at Milton, which is about five minutes' drive from here, which is staffed by a designer. She talks to people about rebuilding, design and incorporating some of our timbers into their homes or into their commercial structures. We also have a timberyard in Banyo and are opening a centre out there. As from very, very shortly, in a matter of days, we'll be starting earthworks at Narangba, which is about 30 minutes north of Brisbane. We're building a state-ot-the-art, world-class set-up to specifically handle recycled timber. Included in part of that construction is a waste transfer station which is specifically designed for wood waste and maximising the resource recovery we can get out of that wood waste.

This is our vision. There are no secrets here. This is what we want to do. We want to remove impediments. We want to improve efficiencies. We need to have greater resource recoveries. We need to implement incentives and disincentives. That's for us. It also needs to be from local, state and federal government to have those things in place. We need to have innovative and composite wood products. We have an example of some of our products just up here. This is one of them, which is an engineered flooring which is the first of its kind in the world, using recycled timber. We manufacture that in Malaysia at the moment. It’s been about eight years in the pipeline, this product. It's a commercial product that's on the

market and selling at the moment. We hope to manufacture this at Narangba when we're fully operational out there.

If we can do this, what's the upside? The upside is sustainable long-term employment, which is important. We have improved environmental outcomes, which is to stop timber going into landfill and also to reduce the pressure on native hardwood forests. The triple bottom line, in terms of resource efficiency and our target for our business, is zero wood waste into landfill. We believe that's achievable. There's a lot that's got to happen for that to happen but it is achievable. There are certainly examples of that throughout Europe and America, with specific states in America where that's happening today - right now, today.

Some of the wood waste projects that have our timber in them: Old Parliament House in Canberra and the rose garden down there, and also the Commonwealth Place just near the law courts. No photo of it here but there's a big commercial deck that has our timber in it. Suncorp Stadium just across the way here has got 48 kilometres of these battens on it, all out of recycled timber or wood waste that would have 15 years ago been put in a - even today in some cases it's still going into landfill. Federation Square in Melbourne: that has recycled ironbark flooring in it, supplied by us and others. Another one is Millennium Arts, which is just across the way here at South Bank, currently under construction by Bovis Lend Lease for the state government. Our timber is going to be used extensively throughout there, not only in flooring but in decking and cladding, a whole range of applications.

So I'm not talking about something that is in la-la land. I'm talking about something that's happening, it's real. There are numerous examples of it in projects that are very particular with what they want. There's lots and lots of examples of homes and restaurants and all that sort of thing where we have our product. I once said to one of the new staff who joined me and said, "Well, where are your products?" I said, "Well, we've got a lot of them in bars in Brisbane." He thought he'd do a pub crawl and go to every bar that we had our timber product on, and he didn't do all of them. There's quite a few that have our product in them, all out of waste wood.

Just a little bit about timber in general, just to put it into perspective. Traditional native hardwood logging, when you have a round log you only recover somewhere between 30 to 40 per cent of that as a saleable product. The balance is bark, sawdust and non-useable offcuts. With our product, with our reclaimed timbers, we have - and those figures are from Timber Queensland - reclaimed timber, somewhere between 80 and 100 per cent of our timber is reusable because traditionally it's in a sawn form and a lot of the time we'll just take it out in its sawn form and we'll reuse it in exactly the same form as we remove it from the structure. With careful demolition we can improve that recovery rate.

In fact, we were very fortunate enough to do some work with the Queensland Department of Primary Industries and Fisheries last year when we looked at a number of structures that we pulled down. Also the Brisbane City Council was very good to come on board to help look at what we can potentially recover out of those buildings if we do it, if you like, in a sustainable fashion - sustainable demolition as opposed to the old "crunch and dump". So there is a lot of upside in that.

At the moment we only have about 30 per cent of redundant timbers that are salvaged. Now, when you consider the quality of these timbers, it's an absolute disgrace and almost criminal to think that we have structures out here that are being demolished. We have specific examples where it is illegal and you'll be charged if you cut a tree down on state government land, but we have state government structures that are put out for demolition and that can have hundreds of cubic metres of useable timber and it gets crunched and put straight to landfill, and the state government sit on their hands and do nothing, absolutely nothing.

We have one down here in Merivale Street, the TAFE building. It was up for demolition for two years. Everyone knew about it. All of that timber, the equivalent of 1000 cubic metres in sawn form, went to landfill - the whole lot - because the demolisher said he hasn't got enough time. If that's not stupid, I don't know what is. So anyway, we are saving some of it but not enough of it. The rest of it goes into a black hole. What happens to it? It goes into landfill. There are specific examples, as happened as late as last year. We have an example where Queensland Rail had a stockpile of timber up in north Queensland that was about 2000 cubic metres. The whole lot of it was burnt, set fire to, because they believed that it wasn't useable. I had a look at it and I can tell you there's a significant amount that was reusable. They had a policy, "Well, we don't believe it's reusable. We've got to get rid of it. We can't sell it to anyone." Just madness, sheer madness.

MR WEICKHARDT: In that case did you try to buy it?

MR KENNEDY: I tried to buy it and we were told that it's contaminated. It's what they call regulated waste. They believe it's contaminated and they couldn't sell it to us. They had to dispose of it into what we call regulated landfill. In this case they just set fire to it, pushed up all the ash and put the ash into regulated landfill.

MR WEICKHARDT: Who classified it?

MR KENNEDY: Queensland Rail.

MR WEICKHARDT: They have?

MR KENNEDY: Yes.

MR WEICKHARDT: And having so classified it, they then said they couldn't sell it to you?

MR KENNEDY: That's right.

MR WEICKHARDT: What was stopping them declassifying it?

MR KENNEDY: I want to talk a little bit about that in a minute, but they don't have the tools on how to classify it. There's nobody who's told them, "Look, it's okay to use this timber you've classified as wood waste." They think because it's been treated with CCA or it's been treated years ago with arsenic, it's regulated waste and it has to go to landfill. Now, there's specific examples in America where timber treated with CCA is quite able to be reused again. We have case studies where timber treated with lead-based paint from an American army barracks was pulled out. The timber was removed - lead-based paint. Lead paint is a toxic substance. The timber was safely denailed, the lead-based paint removed. The lead-based paint went to regulated landfill. The timber was tested at the end of its processing. It was safe, there was no contaminants left in it and it was safe for sale.

Because people are concerned about possible repercussions they say, "Well, we'll just send it to landfill." We have examples outside of Queensland in New South Wales. The RTA classify their bridge timber as regulated waste because they had an example years ago where they gave some timber to a property owner; the property owner used some of it, set fire to the offcuts; the cattle came along and ate the offcuts. He sent them off to the abattoir; they were contaminated, got into the system and came back, and the RTA had to pay a fine. So they're petrified of the potential litigation that will come back on them. I can understand that because they're running blind in many instances. They're not getting any help.

MR WEICKHARDT: In terms of their concern about contamination with the CCA-treated timber, I would have thought the EPA would have been very concerned about them burning it anyway.

MR KENNEDY: Well - - -

MR WEICKHARDT: Anyway, that's an aside.

MR KENNEDY: In reality that's what happens. I think it's an issue. Certainly in Queensland it's an issue for the EPA. Kylie is here, and Kylie knows my views on the EPA. I think they're not doing enough. They're sitting on their hands and doing not enough productively to try and make things happen in this field.

MR WEICKHARDT: Okay.

MR KENNEDY: It's quite a simple thing to do. Okay, that's happening here at the moment. What about even down the track? What's going to happen? Well, I can tell you. Volumes are going to more than quadruple - timber that's coming out. If you think we're wasting a lot at the moment, what's going to happen if we don't change in the future? It's going to be a disgrace. It's a disgrace already but down the track it's going to be worse than a disgrace. We have over 3 million cubic metres of timber in the next 10 years that's going to become available to be recycled. This is predominantly coming from older infrastructure-type projects. We have warehouses, wharves, bridge, power and sleeper, construction, and all of these are reaching their end of effective design life, so we're right at the point - some of them reached them some time ago but due to, I guess, lack of funds to replace them, it's only happening now. We've got a bridge replacement program that's happening in Queensland with the Queensland government; also happening in New South Wales and other states throughout Australia.

Also, particularly related to Queensland, although I'm sure some of this is relevant to other states, is we're having increasing urban real estate values. So where you used to have a big warehouse in West End, for example, well, they don't want to have that any more, so they knock it down and put 40 units on there. We've got the highest population growth in Australia, so there's pressure on infrastructure, hence our water shortage - all those sort of things that we have. There's pressure on to try and fit more people into a smaller area, which is resulting in an unprecedented boom in demolition. If you have a look at the growth in demolitions in the last 10 years, it's staggering. There's been an exponential growth on the amount of buildings that have been demolished. Unfortunately the majority of these find their way to landfill. Cost factor and time factor in a lot of these projects are why they go to landfill. They say, "Well, I'll just crunch it; cheap landfill." They just send it off to the landfill.

Not only do we have that, at the same time we have - in relation to our traditional timber resource, which is the native hardwood, we have reduced access throughout Australia, but to talk specifically about Queensland, we have the South East Queensland Regional Forest Agreement signed a number of years ago. We have the Western Hardwoods Region Forest Agreement, which will be signed in the next 12 months, they hope. Part of that is by 2022 we have complete cessation of native hardwood logging in Queensland, so there will be no timber coming from Queensland owned land. It sounds like a long time away but it's not very long at all. At the moment that supplies over 50 per cent of the hardwood into the Queensland market, so there's a big, big potential shortage there.

There's talk about hardwood plantations picking up the slack. One of the

problems with the hardwood plantations is the lack of private sector interest. You've got a long return on invested capital. To have a sawlog you're looking at, in Queensland, a minimum of 25 years. You can plant it for pulp and get a return in a shorter period of time but with a sawlog it takes at least 25 years. I don't know about you but I don't want to put my money up for 25 years and not see any return. There is very little public funds being directed into the establishment of plantations, despite the fact that there's been reduced access for the traditional timber resource. There's also strong competition for land use. We spoke about the boom in the population. Well, that's right throughout Queensland, so land that was worth $100 an acre is now worth $500 or $600 an acre. It makes it uneconomic to use it for hardwood sawlog production.

As a result of that, we have a heavy reliance in Queensland on imports. Over 50,000 cubic metres a year, and growing rapidly, comes into Queensland. This timber is traditionally sourced from South-East Asia, Pacific North America; increasingly it's coming from other countries such as Africa, South America and Russia. All of these countries have varying degrees of environment controls that they have in place. Some of them have none, some of them have at least the appearance of some. For us to stand back and say we're going to shut up our native forests - not that I'm saying we shouldn't do that, but to close up our native forests but we're quite happy to import timber from countries that are really doing far more environmental damage than the native guys are doing is just complete and utter stupidity.

Okay, well what happens? In America, regulated wood waste, including reusing preservative-treated timbers - so that's currently reused. In America you can reuse it. Wood waste is not allowed into landfill sites. This is in a number of specific states; not throughout America but there are a number of states that have completely and totally banned wood waste in landfill sites. In Australia we have little or no guidance. In fact, you can probably be so blunt as to say we have absolutely none. Therefore, government authorities like the RTA, like QRail, like Main Roads - they prefer to bury those timbers, send them to regulated waste, rather than having them available.

Despite the fact that we spoke earlier about the quality of wood resource and fibre resource these timbers are, despite the fact that it's so magnificent, we're still putting it in a hole. By any objective measure it is really stupid.

MR WEICKHARDT: Michael, in the US examples, in the states you referred to, has the ban been put in place because of concern about preservative-treated timbers causing some sort of environment problem if they go to landfill, or is it being done for resource conservation reasons?

MR KENNEDY: It's being done for a number of reasons. Predominantly it's being done for the latter because they're trying to reuse a resource. In the next slide we talk about what's happening in Europe. It's the scarcity of the resource that they're saying, "Well, we should be able to do more things with it. Why have we got these big landfill timbers?" When you cut them up there's nothing wrong with them. The structural integrity is still fine. We did some work with the department of forestry last year, just in terms of testing of recycled timbers. We tested timbers from a bridge at Wiangaree in northern New South Wales, from a warehouse in West End and from an old church over at East Brisbane.

We pulled the timbers out, did some structural grading tests on them. The timber that came out of the bridge was, on average, around about 5 per cent weaker than when it went in. We're talking about timber that's on a bridge. It's outside and has semis over it every day. It's on the Pacific Highway. This timber was 70, 80 years old, so it didn't deteriorate very much. The timber that came out of the warehouse had actually improved. When we cut it up it had actually improved. All it's properties had increased. Yet here we have, two months ago, the TAFE building over here crunched and all put into landfill with all these qualities, and I'm going, "What's going on here?"

Okay, in Europe, zero wood waste policies. They've been successfully implemented since the 1990s in quite a number of countries, not just one country - a number of countries. An example is Germany. They have a four-class system for wood waste resource. They classify it according to A1 through to A4, and depending on its level of contamination, a whole range of things. It's quite a detailed why they classify it. They also have a very, very big industry that talks about using wood waste for fibre feedstock for particle board production. It's very, very big over there. There are a number of large publicly-listed companies that use this wood resource to make particle board. We're quite able to do it in Australia. It's just that we think it's smarter to put it in a big hole and cover it up.

They also have in the UK something which is great. They have an online waste resource trading solution. So if I've got a product that is no good to me, I can list it. These are predominantly not for profit. I can list it on that web site and somebody can log on and have a look and go, "Oh, that's a good idea. I can use that." This person gets four cubic metres of hardwood waste today. "What size is it? Yes, I can use that for making something else."

We have irreplaceable world-class timbers that are buried in the ground. It's completely and totally unsustainable and it's a waste of valuable resources. It's very sad. It is just - how absurd, you can't describe it. That little girl there, she's crying because they told her about it and said, "Wood waste, terrible; you don't want that." Why aren't we recycling more of it? What I've got now is a list. I haven't gone into a

lot of detail but there is bullet points. We have an absence of reliable data. We have an article that was in Australian Wood Review. It talks about waste wood. Queensland is the only state that doesn't have reliable data on wood waste. The other states have reliable data. Victoria, for example, has EcoRecycle that collects that information. In Queensland we have nothing. If you want to know how much wood waste is there, you have a bit of a punt or you talk to the people in the industry and you collate their information to come up with some figures.

We have nervous asset managers: the guys at Queensland Rail, the guys at Main Roads. They're going, "Well, you can't reuse that. We heard what happened with the RTA. The RTA had to pay a fine of millions of dollars. Well, you're not going to reuse our CCA timber, so we'll just put it in a hole because we think that's the best thing for it because we don't know any better." If it can't be measured, it can't be managed. If we don't know what's out there and what's coming out and how we classify it, how are we expected to manage it? If it keeps going like this it will continue to be seat-of-pants type management, which is not effective.

With demolition, poor planning creates time pressure and we have the cheapest landfill in Australia. It's so cheap to crunch it and put it in a hole. If I got 10 demolishers here and asked them, "What's the quickest and easiest way to demolish a house?" 10 out of 10 would say, "Crunch it and I'll send it out to the landfill." So what about the valuable resource? Every house, mind you, has the equivalent of a semi load of sawlogs in it. That's a lot of wood. It's over 20 cubic metres that can potentially be reused. We know about the quality because we've done the studies with DPI on the structure of the timber and how good it is.

Okay, we have no requirements for recycled materials audit prior to demolition; there's none. 20 years ago we didn't use to do an audit on asbestos because we didn't think it was that dangerous, so we used to just crunch the buildings with asbestos in them and bury them in a big hole. Well, now we realise asbestos is a bit dangerous, so we have to do an asbestos audit. So we've got people with suits, and they go in and they take it out and they wrap it in plastic, and they put it in a special landfill site. We don't do any of that with timber or any other materials, for example. I'm only talking about timber but there's lots of other examples of structural steel that can be reused. We have no training for contractors to identify recyclable materials. If anyone here wanted to get a demolition ticket, for $1000 you could get one. It would take two days. That's pretty easy; no training.

There is a lack of clear incentives and disincentives for demolishers and reusers of recycled timber. Apart from small examples, we don't have a policy from the government on, "Yes, we're going to support people who are reusing recycled products and we're going to punish those people who are sending them into landfill." That doesn't happen at the moment. It's almost the opposite. It's easier, cheaper,

quicker to send it to landfill, so that's what happens. Poor local government administration of demolition permits. You ring the Brisbane City Council and say, "Can you tell me how many buildings have been demolished in the last five years?" "No." "Can you tell me how many demolished in the last six months?" "No, we can't tell you that." People have no idea. It's absurd.

MR WEICKHARDT: Can they give you a list of what is going to be demolished next week?

MR KENNEDY: No. This doesn't allow for logistical processing of demolition projects. For those people who want to use - specifically for use, because we're timber, but there are other people who use other products. If they know what projects are coming up, what materials are in them - with an audit - we can say, "Well, look, we can potentially put a value on that." State government procrastination and inaction - I mean, it's absurd. Over the last five years, over $50 million has been spent on native hardwood logging restructuring - in 17 years we're not going to have that, we're not going to have a native hardwood logging industry - and nil on recycled timber.

Lack of research into structural wood composite and panel products from wood waste. I mean, we've done it. We've done ours because we think it's a good thing. We know we can make money out of it. We developed some products. We got that there, we've got some hand-brushed timber. We've got ones we did at SunCorp - a whole range of products, but as an industry we don't have it. We're not being innovative. Ignorance of potential value of wood fibre, right across the board. That's from the asset owners, whether they be Main Road, QRail, RTA - a whole range of people, right through to the demolisher.

There's a lack of industry standards for recycled timber products, although I put the point there that Timber Queensland are currently looking at developing some standards with assistance from ourselves and a number of other industry players throughout Australia for recycled timber. If that happens that's going to be a very positive thing. If you don't have standards, someone who wants to buy a recycled timber product - how do they know what they're getting? They don't. We've got standards for recycled concrete, so you can specify if you want to use recycled concrete. You can specify what it is. "There's the standard. Let's use to that." This unfortunately has the potential for poor-quality products to come in under the guise of, "Because it's old timber it's good." That's no good for anyone.

There's a number of places this has to happen. It's not just for the federal government to do something. It's not just for the Brisbane City Council to do something. It's right across the whole spectrum. Industry needs to do something. Local government needs to be more proactive. So does the state government and the

federal government, because it won't happen by one of those people just doing something. If we can do that, what are we going to have? We're going to maximise our resource recovery. We're going to have a well-equipped recycling system, a sector with consistent supply. This is going to relieve pressure on native hardwood forests. It's going to reduce our reliance on imports and will result in customers having products that are sustainable. That's a big issue at the moment, having products that are sustainable. We're quite happy to import things from overseas that are unsustainable but we're not looking after Australia.

We have huge potential for export value adding Aussie timbers. You'll see we've got the legs there in that container. That was one of the Kiwi workers with a shipment we sent back to New Zealand. We were hoping to send him back but he won't go. Unfortunately he didn't go back; he's still working for us. If you want to know how much income we generate from exporting timber: Austrade figures for 2004, a study they've done. For every dollar we export, another four are created - a multiplier effect. There's a big opportunity. We've got the best hardwoods in the world, bar none - the best. Remember, the old hardwoods that have gone into a structure, when they come out, by and large, their quality is at least as good - in some cases improved - yet we still put it in a hole.

Okay, we have a triple bottom line. We've got long-term employment that can happen here, which is important, particularly in a state like Queensland where we've got a lot of population growth. We have sustainable environmental outcomes that are sustainable for all people, all parties, and we've got an exponential growth in resource recovery. Instead of putting a product in the ground, we can produce it into other products that are reusable. We have an example of a surf company that we supply - City Beach. They use recycled timber in their shop fit outs. We have a store we did at Carindale seven years ago. We put the timber in. Now, every five or seven years they have to update their stores. They updated their stores. The shopfitter rang me and said, "This timber in here, we're just going to crunch it all." I said, "No, no, hang on. We'll come in and pull it out." So we used recycled timber to start with. We sent our team of blokes in there, we pulled the timber out, and we've now resold it to another person. That's got to be good.

At the beginning we started back with Mr Baker talking about how important it was to look after the timber. Now I'm finishing with Mr Baker and I'm going to talk about "for these to be allowed to pass away without any attempt at their recovery would almost be bordering on criminality". In fact, if it was new timber it would be a crime. Not many countries can boast such a wonderful heritage as our marvellous hardwoods. I've changed his quote a little bit and added our comment but it's still very, very relevant. Thank you very much for listening.

MR WEICKHARDT: Okay. Thank you very much indeed, Michael. There's

some very interesting material there. Can you go back to the CCA timber? We've had a number of submissions to the inquiry hearing. A lot of people are concerned about CCA timber and whether or not, by encouraging its use, we're creating some form of time bomb where this product can't be safely either reused or disposed of. What do you believe is the appropriate way of handling CCA timber?

MR KENNEDY: I think there's a couple of things to look at. Firstly, CCA-treated timber is in itself not a dangerous product. I think there is enough information out there from a number of studies that will validate that. I'm happy, if you'd like me to, to provide them. I don't think it's inherently a dangerous product in normal application. In specific applications where people eat the timber or rub their hands back and forth on it and then put their hands into their mouth, there can be potentially some issues, but there is no requirement that CCA-treated timbers should have to go into landfill. They can be very safely reused in particular applications where they don't have exposure to either people licking them or taking splinters off them - in those sort of applications.

The current guidelines that are coming out in relation to CCA talk about CCA-treated timber not being used on handrails, on deckings, around kindergartens, in any playground equipment. But to use CCA-treated timbers in an exposed beam in a shopping centre, really there's no issues there with it whatsoever. I think it's a case of not throwing the baby out with the bath water and saying just because it's CCA-treated timber, therefore it must be all bad, which unfortunately is what is happening at the moment. Anything that is CCA treated is regarded as contaminated and it's going into regulated waste. There are examples of what they've done in America, some studies that were done by the equivalent of the DPI in America. They did some studies with CCA and contaminated timbers, removing those contaminants and having them available to reuse safely. So it is possible.

MR WEICKHARDT: I'm assuming that with maximising the value of some timber in a building that's about to be demolished, your own preference would be to actually supervise its removal, rather than simply to arrive after the bulldozer has gone through the building and then pick through the waste. Is that fair comment?

MR KENNEDY: That's a very fair comment. We have a number of demolishers, not only in Queensland but who we work with in other states, where we spend a fair bit of time working with them to show them what we want and what we recover, and helping them maximise their recovery. Don't forget, we actually pay them for the timber. We pay them a significant amount of money for it.

MR WEICKHARDT: In that circumstance, if you're prepared to pay for the timber, provided you're aware of where the timber is, what's stopping this happening? Naturally I would have thought it was in the interest of somebody to

recovery this and get some value for it.

MR KENNEDY: The issues we spoke about before, the impediments, the time constraints sometimes - poor planning. Cheap landfill is a big issue because if you have a project - and I'll go back to the example of the TAFE college in Merivale Street, where it was planned for a long time and basically people were sitting on their hands, not making a decision. Then when a decision is made, it's all panic stations that it has to happen. They say, "Well, look, it's quicker just to crunch it. It's easy and cheap to put it into landfill, so let's just do that and get on with the project."

MR WEICKHARDT: In the circumstance where it arrives at the landfill site, do you have any experience of actually recovering timbers from that environment and sorting?

MR KENNEDY: We've had a number of projects where we're doing that. We're undertaking one in Tasmania next week, where a wharf was knocked down and specifically that stuff - we'll be dealing with that. They've knocked it down in the traditional fashion and put it in a big .....

TAPE CHANGEOVER

..... it's all rubbish, can you come and have a look?" We went through that and out of that timber we pulled out around about $300,000 worth of reusable timber. That was destined to go to landfill and they were quite happy to send it to landfill, except in that instance there was some requirement from state government that a certain amount of timber was recycled, so that was a positive thing in that instance.

MR WEICKHARDT: The material you cited from Malaysia earlier - you held up some product - what's happening there? Are you exporting woodchips or something?

MR KENNEDY: No, no, we export a solid product. For example, in the old language it's a six-by-two product. It's sawn over there, with a fine four-mil of timber on top there, and then it's laminated onto an engineered floor, and sanded and polished. It comes back to us as a finished product. We export the timber over, they cut it, process it, value add to it and then sell it back to us. There is potential for that to be done - and one of the things we'll be doing at our site is to look at doing it on site.

MR WEICKHARDT: The recovery of assorted timber into particle board or MDF or something like that, what's inhibiting that, in your view?

MR KENNEDY: There's a number of factors. There are cheap products available at the moment. I guess there's a lack of incentives for people to go and investigate

whether it's worthwhile, mixed product, and deliver it to site. Lack of sorting on site - say at the demolition site. They're probably the three key areas. It is a very, very big business in Europe - the particle board manufacturing, using recycled timber - but that's only one part of the waste wood issue. Because we have far superior timbers to Europe, they use timber in a building and they pull it down; it doesn't have the structural strength to be reused, whereas our timbers we can use in a bridge, like the Wiangaree bridge that was there for 80 years with semis driving over it every day. We'd pull it out and we could reuse it again in a structural application.

MR WEICKHARDT: I guess it would aggrieve your heart, but better than the product going to landfill - recovery of energy from actually burning timber that's not reclaimed for other high-value uses. Are you aware of that actually happening in an organised way in Australia?

MR KENNEDY: I'm not aware of it happening in an organised way. I'm aware that there are people looking at it. A number of merchant bankers are looking at it. I think it's probably the last point in which you'd want to use the timber, and certainly in the German example they have the four classifications of timber. They use it for a whole range of things and the last option is for fuel. We have in Australia relatively cheap fuel resources and we have better calorific values from coal, for example, than you get from timber. I guess by world standards we've got lots and lots of it and it's pretty cheap. The RECs that you can get, which is energy production - you can get REC certificates using green power. There is some issue about the valuation of those and the numbers on actually using it for fuel at the moment are very difficult to stack up because we have hydro schemes that are claiming RECs as green renewable power, and it's very difficult to use (indistinct) in making money out of it as a purely commercial operation. We have looked at it. We looked at putting a power station in, a small power station for our wood waste, but if I wanted to lose half a million dollars a year I'd put it in. I decided it's not a good thing.

MR WEICKHARDT: We did have somebody who presented at the Adelaide hearings from a demolition resource recovery company, Resourceco, who recover all sorts of construction and demolition waste. Part of what they do is to recover wood waste and to sell it in a joint venture with Adelaide Brighton for use in the cement kiln. Again it would probably aggrieve you as not being a particularly sophisticated reuse, but probably better than it going to landfill.

MR KENNEDY: There is a specific example of energy production, and I should have mentioned that, at the Rocky Point mill that's owned by Stanwell about 40 minutes south of Brisbane here. It was set up to use wood waste and sugar mill waste as a combination. Now, that power station loses six figures every year and they've had enormous difficulty with the operation of that. It's had issues regarding contamination of wood waste getting to site. For example, when it comes in it's got a

load of cement in it, mixed in the middle. How do you separate that? There's steel in there and they've had enormous problems. One of the issues was the design of the power station to start with, but also not proper sorting of product to get there, so I think with wood waste, energy production is the last option. There's a lot more potential upside to be examined before we even look at that. Some people think of that as the best option but I think particle board manufacture would probably be a better option in many instances.

MR WEICKHARDT: Are there other companies in this field in Australia or are you almost alone?

MR KENNEDY: No, in Queensland there's about 50 or 60 recycled-timber companies. The industry is worth about $75 million in Queensland, grown from about $5 million in the last 10 years. Across Australia there are probably people that are, if you like, multi-million dollar businesses that are turning over more than $1 million. There are probably about 25 or 30 that are specifically focusing on recycled timber but there is potential for the industry to grow. In Victoria, for example, there are four companies that are as big as we are, using recycled timber. In Brisbane we've got probably one and a half, even though we've got much more resource becoming available, because Queensland was all built on timber and tin. Everything was out of timber because it was so cheap and we had lots of it. We could have, in Queensland, at least another five or six people at least as big as I am, or bigger, doing what we're doing. There would be room in the market for them, absolutely, not that I'm encouraging competition - being honest.

MR WEICKHARDT: Well, Michael, thank you very much indeed for your presentation and for appearing and for your submission. I appreciate it very much.

MR KENNEDY: Thank you very much for the opportunity.

MR WEICKHARDT: Now we're going to adjourn the hearings for as short a time as possible, to let the court reporter set up, and then we'll resume as soon as that happens. Thank you very much indeed.

MR WEICKHARDT: We will now resume the hearing. Our first participant after the break is Dr Michael Clarke from METTS. I'll just get you to say your name and give your position and company, please.

DR CLARKE: I would like to. Thank you very much for the invitation today. My name is Michael Clarke. I am the chairman of METTS Pty Ltd. I am also in Queensland the chair of the energy from waste group which is part of the interest group which is part of the Waste Management Association of Australia and a committee member of the Waste Management Association. I'm also on the committee of the Environmental Engineering Society for Queensland. But today I represent only myself and my company METTS.

MR WEICKHARDT: Thank you. We should assume that I have read your submission.

DR CLARKE: Thank you very much.

MR WEICKHARDT: If you want to make some comments we've allocated 45 minutes for this. If you can stick within that time and allow some time for discussion I would appreciate it.

DR CLARKE: I believe in making things a lot quicker than that or boredom sets in. A couple of themes. The first theme is my opposition really to a zero waste concept. This comes from experience in Asia and also in Australia where many people have aspired to zero waste, but also some people have become confused and they think it's a goal that can be attained. Unfortunately I'm a realist and I don't think it can be attained. What I've seen from this belief in zero waste is that many, I think, good energy and good waste management projects have been lost, or have been deformed or not have not actually gone ahead, through this perhaps mistaken belief they can get rid of waste. Human beings, I don't believe, can do that.

My other theme today is really to have another look at incineration. It's a dirty word, incineration. People might say that dog doings are dirty. Some people would even say that incineration is a dirtier word than that, but incineration perhaps has had very poor publicity particularly in view of some of the improved technologies that have come in; technologies that will help protect the environment both from the incineration process and also will allow incineration to become a more fulfilling environmental process.

When we look at incineration it has a place on the hierarchy of waste management, which I would like to put up next. I've noticed, Mr Commissioner, that in your reports there are a fair number of people quoting this figure. I'm sorry it didn't come out quite as neatly as I would have thought. But this is my version of it.

Here what we have is the most desirable and the least desirable, but I haven't included zero waste in the desirable because that is not to me a realistic point.

Then we go onto the next slide: application of the hierarchy. It should assist with emphasising opportunities for waste management but it does not take into account the cost of resourced energy in moving waste up the hierarchy. It doesn't take into account the health risks in such movement. Can I give you an example. There are two proposals in Australia at the moment for the use of rubber tyres, both of which have great merit. One proposal comes from the Gold Coast where it is to take tyres and literally recycle all the materials that come into a tyre, remove the rubber and the steel but also have it available for recycling.

There is another proposal, also with merit, that the tyres will be re-used. They will be cut back - they will be cut off on top - and they will be used in civil engineering works. They use the strength of the outer rim. It's a good idea. We can use such tyres and we fill them with ballast, place them on some sort of a geo cloth; a fantastic idea. So that would be in the re-use group. But are there any disadvantages on the second proposal? Yes, there are. Number 1 it will require large tyre dumps and tyre sorting areas. Tyre dumps and tyre sorting areas catch fire sometimes.

From my experience in Asia I have learnt that tyres are a disease hazard; a major disease hazard. You might have played as children with tyres in the backyard and you always find in a tyre you have some water from it being entrapped. It's very hard to get that water out. That water can carry mosquitoes. There is one excellent case where mosquitoes were carried from Japan at one time to California. There were some major problems. So on the waste hierarchy what is the better one? Perhaps in my example the recycling that will look at taking the whole tyre, but reconstituting the materials, might be a better solution.

Incineration with energy recovery: this can be carried out successfully with no harmful environmental consequences. I noted recently that the Irish government for instance has gone back to consideration of incineration. They were under considerable pressure at one time not to have incineration, but they have decided that it has many advantages over the other alternatives. The Irish government have taken the choices for managing waste out of the political hands and put them into a commission. The commission looks at the technology primarily and what is the safest way of handling wastes.

The European Commission has also done much good work. It has set up a series of guidelines on what is good incineration practice. You can find this on the web site. I recommend that you have a look at it. It talks about dioxin levels that are acceptable and not acceptable. Many other emissions are acceptable. Right? In what levels they are acceptable and how this incineration should be done properly

with no health problems.

What is required from modern incineration with energy recovery? To me (1) it should produce a biologically inert ash. I have been disturbed when I was once in Sydney at the old Waterloo incinerator, which is now closed - it wasn't a good machine - when I was looking into the actual combustor area to see a drum full of maggots go right through the combustor and actually come out as live maggots on the other side. That is not a biologically inert ash. A biologically inert ash to me means that there are no recognisable substrates left in the material. Probably there are no significant residual carbon compounds. Right? Essentially there's no food value for anything left in that. Ash can always be reconstituted into a soil but then you would add compost or humus to that.

It should significantly reduce the amount of material going into landfill. I'd like to acknowledge the presence here of the vice-president of the Waste Management Association of Australia, Dr Moy. In the submission from the Queensland group of the Waste Management Association of Australia there is reference to the German practice where Germans want the mass of material going to landfill to be very significantly reduced, meaning incineration producing ash. David, thank you very much for that reference. It should produce a significant amount of energy for the community use. Yes, perhaps we have gone away in many ways from having local power stations like we might have known in our youth, but however I would suggest that in some areas local power stations working on waste are a good idea.

Who is doing this sort of stuff? Well, lots of people and I'd like to recommend you this book. I've only got one copy so I can't give it to you. It's the International Energy Agency Bioenergy Task Force number 23. It's available from the IEA and it's a marvellous read. You can take it to bed at night and become very excited. Right? But I would recommend it and it will give you many examples of where this is going on. Okay? Where there was rejection of incineration in the past people are saying, "Wait a second. Let's get into it. Let's do it well." There are some rules and guidelines in here. There are good examples in here; excellent material.

Should Australia do likewise? Yes. I know some of my colleagues at the Waste Management Association say "no". Their attitude is that we have plenty of room in Australia for landfills. We can put landfills at the back of Sydney in an old mine. Why? Landfills are not productive in any real sense. If they do produce any energy as landfill gas, it's only a fraction of the energy that actually goes into them, and you only collect a fraction of the gas anyway, including methane, which has a high global warming potential. Another thing about landfill - well, everyone has to admit they do leak and I'm thinking particularly, for instance, of the landfill at Lucas Heights in Sydney, which partially has replaced that old Waterloo incinerator.

People are now hauling this garbage all the way through Sydney to Lucas Heights and, my God, what they've got is a large leaky landfill.

A bit of a story: one day I was speaking to someone and they asked me about nuclear energy - this is only an aside - and they said, "Wouldn't you be scared to live at Lucas Heights?" I said, "Yes, I would be. I would be very scared to live at Lucas Heights." They said, "You're scared of nuclear energy?" I said, "No, it's the waste dump on the other side of the road. That is the one to watch out for, because that's going to come out and get you." Conclusions: unfortunately waste creation is part of human existence. I was telling a story earlier today that some of the most interesting parts of Rome now that have been dug up, ancient Rome, are the landfills. They can find more or less whole corpses in there, because some of the stuff doesn't putrefy very well.

Each generation of us will produce a mark on the environment and I'm afraid that exists for people that are to come next. The marks should be minimised as far as possible, so it's minimisation, which I think is just commonsense, and zero waste is an unachievable goal, and I think a dangerous goal. Incineration with energy recovery is a very legitimate waste management practice. Let's go back to the word "incineration" instead of mucking around with words like "pyrolysis" or "gasification", because those lesser forms of thermal processing frankly don't work. I would refer you to the machine that failed in Wollongong, New South Wales, the SWERF machine. Hell of a lot of money spent, but there was not enough energy essentially in the waste to make gasification or pyrolysis work.

You can't get around good science, I'm afraid. Good science leads to good engineering. Get the science wrong and your engineering is up the putty. For each waste a life cycle analysis should be done. It will tell you about where you're going to put the waste on the waste hierarchy, but also you have to consider that as new technologies come up, as wastes change at various times, you have to perhaps rethink some of the life cycle analyses. I've been very happy to go out and look at the recycling of paper, out in the Visy plant at Bulimba - a marvellous piece of Queensland technology, a marvellous Queensland piece of enterprise. I was speaking to a gentleman only two days ago about this. He said they are having problems now. I said, "Why?" He said, "It's because of the nature of some of the cardboards that are coming in."

You might remember, about a couple of years ago, if you bought a carton of beer and put it in your fridge, if it became wet, that carton, and you tried to pull the carton out, you would have beer all over the floor. This has been solved by having these wet-strength cardboards, plastic-impregnated cardboard; a very good idea. It saves you from dropping your beer on the ground but it also causes great pain when it comes to recycling that cardboard. Again, let's look at the hierarchy of where this

waste is. Some of those wastes now have to be landfill as against recycled. Lastly, ladies and gentlemen, may we all produce less waste and, the waste that we do produce, may it be cleanly and productively managed. Thank you very much.

MR WEICKHARDT: Thank you very much indeed, Michael. They were some very interesting comments and I think we would like to get the reference to that document later on, if we may.

DR CLARKE: Please.

MR WEICKHARDT: Now, you say on page 1 of your submissions that purveyors of zero waste concepts undermine the efforts of waste management professionals in devising and implementing efficient waste management systems. In your opinion, what waste management practices are not being taken up, apart from this one you've commented on, incineration, as a result of the pursuit of these zero waste targets?

DR CLARKE: Very much I would think incineration and combustion-type processes. The idea of zero waste means that we are going to perhaps be looking at whatever material we do produce, we can handle it ourselves. I understand that some people that are in the composting business would say, "Yes, well, we've got the waste at least composted. Let's see how much further it can go." But essentially the one that I have seen been knocked on the head is the energy recovery-type systems.

MR WEICKHARDT: You also make a comment in your submission that incineration should have the following characteristics: you say use oxygen combustion to aid potential CO_2 sequestration. Everything combusts using oxygen, but I'm not sure I follow the logic.

DR CLARKE: Allow me to explain. If we can have a concentrated stream of CO_2 coming through a combustion system, which may happen in the future if we combust with oxygen and not with air, we will have a stream of gas that will be far more easily sent to geological structures.

MR WEICKHARDT: Okay.

DR CLARKE: This becomes probably more important - now, just to go onto another point - thinking back to that last question, if we look at waste and combusting waste, it only has often a very marginal energy value. Quite often we have to look at combusting waste or co-combusting it with other fuels. Now, in Australia, and particularly in this region, in the Brisbane-Ipswich region, also in New South Wales to the south-west and north of Sydney, in Western Australia around the Collie, we have very great quantities of coal waste. The coal waste can so often provide a good co-production or good co-firing material. Now, the coal waste itself

will add fuel, ensure good combustion of other wastes, and I would believe that it would be a worthwhile system of doing it.

I see Dr Glynn here today. At CSIRO, or QCAT where Dr Glynn comes from, they have a rotary kiln combustor, which they have developed. It can burn almost any waste. I mean, Dr Glynn had me out there one day putting chicken poo through it: lot of fun, particularly since the chicken poo was rather awkward at the time. But here we have a system where we are combusting wastes, okay, but using a gaseous material. If that system in the future was using oxy firing, oxygen as against air, I believe it would be more efficient. One of the challenges, of course, is to perhaps have a more economic means of producing oxygen than the present cryogenics. I refer you to the United States Department of Energy's work on them. They are working very much on trying to find cheaper oxygen supplies. So these questions - sorry to come back - if we can put perhaps other wastes together with oxygen, we will even do a better job and also will increase the amount of electricity produced per unit mass or unit volume of waste.

MR WEICKHARDT: Okay. On a similar note, and perhaps the answer is the same or similar, you note another characteristic of incineration: maximised use of all fuel constituents in the process-engineered fuel. No mass burn and - - -

DR CLARKE: Yes, you often see words like "process-engineered fuels", which is the new terminology, or "refuse-derived fuels". People in the past have had failures with incineration - I'm thinking of one in the United States which was an absolute disaster - where you just take a holus-bolus mass of waste and try to burn it. The combustion is very, very inefficient and often very poorly completed. It doesn't work. In the waste hierarchy we can look at what can be recycled and what can be removed. Already in Australia, for instance, we're improving in some ways the energy value of waste by taking out glass and tin cans. We probably reduce the energy value by taking out plastics, but by turning this material from being a raw waste into an engineered waste, which would probably also mean it has to be shredded, pulverised to make it acceptable to combustion, is also very important.

MR WEICKHARDT: The European examples, are they tending to use screened or partly segregated waste?

DR CLARKE: Yes, everyone is having a waste preprocessing to make the waste more acceptable to the incineration process, to get more energy value out of it and to produce a final ash that is far safer than it would be otherwise. The worst example would be to have a stewed-down waste where you have, for instance, partially combusted material that is not properly combusted so that it does both form dioxins and holds the dioxins in the char. That is not an acceptable situation. What is acceptable, as I said earlier, is that the carbon be burnt out - the char be burnt out to

an ash and that we get a safe material at the end.

MR WEICKHARDT: Now, we have had a number of people present to this inquiry - the Cement Industry Association and some people in Adelaide who were in resource recovery from construction - who have talked about the use of cement kilns as a method of substituting for other fuels and using either tyres or timber or waste oil. Do you have a view on the adequacy and appropriateness of using cement kilns in the production?

DR CLARKE: Yes, I do. It is an excellent idea where you do have the opportunity for a cement with materials that might be awkward, including perhaps plastics and materials that could contain some rather nasty chemicals - chlorinated hydrocarbons. The cement kiln has the ability, both in terms of temperature and the absorption of chlorine and sulphur, to actually destroy those nasties. You can load it up to a fair extent with volatile organic carbons, even dioxins, without affecting the quality of the cement, and also these materials do replace some of the coal or oil fuel for cement. So that's a win-win situation. It's an excellent situation practised in Germany and other parts of Europe, practised in Japan and I think at one time there was a practise of that here. I don't know the site. Perhaps Phil could advise on that.

MR WEICKHARDT: No. There are apparently two or three sites that are using it but some who still have difficulty getting permits from state government and council to do this, because, as you have commented, incineration is seen not to be a politically correct thing to do.

DR CLARKE: Mr Commissioner, a number of years ago I looked at this very seriously when I was running my own fluidised bed combustor, and what I considered was the major area where there was some risk here is in the delivery of the waste materials to the combustion unit or to the cement kiln. I suggested at the time that you would look at perhaps paper with plastic-impregnated paper-cardboard capsules. Where you had some of the worst waste, where the waste would be put in them, they would be sealed and they would be delivered directly into the combustion unit, whether it be a cement kiln or a fluidised bed combustor or whatever unit you are going to go and do to go and get rid of it.

So good management coming up to the kiln mouth. In a cement kiln you've got the very nice idea that the chlorine and sulphur sed is absorbed, so you don't have to worry about those at the other end of the kiln. But of course you have to have good housekeeping at the front end.

MR WEICKHARDT: You mentioned that there had been some examples which may well have given incineration, in the past, a bad name, where incineration of waste has not been well managed. I think you referred to an example in

New South Wales which is now closed.

DR CLARKE: Yes. That was at the Waterloo incinerator, which was owned by the Waverley and Woollahra councils, councils that have some of the highest per capita income in Australia but they were sending their waste over to the South Sydney area that has one of the lowest per capita incomes in Australia. There were some problems in equity that were considered there. Although that incinerator was originally built for the City of Sydney and South Sydney, it ended up being owned and run by these fairly rich municipalities. That brings up the political problem: why was a rich man's waste being burnt in a poor man's area?

So it had a political problem but the other thing it also had were some technical problems, in that the system that was used was really a mass-burn system. There was very little preworking of the fuel before it went in there and the units themselves were originally designed to have boilers on them, but for some reason they never put the boilers in. There was supposed to be a power generation unit. I don't know why they didn't actually have energy recovery. So instead of energy recovery, to go and quench the actual temperature coming up the chimney they sprayed water into it. Now, what you ended up having over there was a most unpopular plume of steam, which many people thought was just pure pollution. A little bit of pollution in it, mostly steam, but it looked terrible.

So again there was not good technology and also very bad politics. By the way, I was part of a group that looked, in 1991, at replacing those or replacing the unit, but politically it was not possible. Technically, yes; politically not.

MR WEICKHARDT: Okay. Well, you are confident now that the technological solutions are available to do this, if handled properly in an appropriate way?

DR CLARKE: My word, yes, and I think the Japanese and Europeans are proving it. The Singaporeans have proved it a long time ago. In 1989 I was in the Jurong incinerator - power station. Well run. Even then they had excellent environmental credentials.

MR WEICKHARDT: Have you done any sort of cost-benefit analysis of incineration as opposed to landfill and how these two depend, in terms of their economics, on location or waste type? In what types of waste do you think incineration is most beneficial?

DR CLARKE: Well, okay. The economics will depend on how far you have to haul the waste. If, for instance - and I am sorry to give a Sydney example in Brisbane, but if you looked at Sydney, if they had kept the Waterloo incinerator running, it was fairly central to Sydney and it would have had, for many, many of the

city areas, very, very short haul times. So you would have saved a lot of road type of costs. You would probably have saved a few people's lives over the years because when you are hauling big trucks through the roads it's dangerous; someone is going to get hurt one day.

But again, the economics are about the haul times, okay, the cost of the land and the landfill, because you are still going to need landfill with incineration but, of course, you could go much further for much longer; the material that you haul will be less objectionable because that also can have a value on it - less smells and other problems; the energy recovery from combustion units. It depends on how you price it. If it is simply on electricity price you will find that it will assist in the total running costs of your unit. It won't cover all costs. If you run, for instance, waste coal, perhaps in some operation in the future out at Ipswich, you will get a value from using the waste coal in terms of cleaning up the environment there; that coal often catches fire in the dumps, anyway. Spon com is a very big problem out there.

So you will get a value from that and also you would have a bigger unit that would probably cover more of its costs in terms of electricity production. There is no simple answer. It's on a case-by-case situation.

MR WEICKHARDT: What wastes would you most favourably see as being in the future incinerated, rather than being landfill?

DR CLARKE: Number 1, municipal waste.

MR WEICKHARDT: All? Unsegregated?

DR CLARKE: When I say "municipal waste" I mean refuse-derived fuel, where you first go through the hierarchy and, of course, as you know now, in municipal waste in somewhere like Brisbane you have more than one bin. It is already segregated by the householder. What goes into the putrescibles bin, or in the unclassified bin, that would then have to have some reprocessing done on it - shredding, et cetera; perhaps the removal of metals, and then into the incinerators.

MR WEICKHARDT: Okay. In the commercial and industrial waste, people have talked to us about an alarming quantity of what they call flock that comes from motor vehicles that are shredded. The waste metal gets recycled but all the other plastic and other material gets landfilled at the moment.

DR CLARKE: Yes.

MR WEICKHARDT: But I am told that has got quite a high calorific value.

DR CLARKE: It would have a very high calorific value. That would be marvellous in a cement kiln. I don't know whether you'd let Dr Glynn mention this or if he can speak for a second. His kiln that is out at there at QCAT would be a marvellous machine for looking after that sort of material. Again, you can add to this machine a reasonable amount of limestone to absorb chlorine and sulphur that may be contained in that material waste from the motor car recycling.

MR WEICKHARDT: Now, in your conclusion you state:

> Promoting a specific waste's fate to a higher echelon in the waste hierarchy should be matched with a current life cycle analysis of the waste in its raw state and in the proposed final product state.

Could you just amplify that?

DR CLARKE: Yes.

MR WEICKHARDT: Are you saying we should choose the appropriate option once we've taken account of all the benefits and costs of the different options?

DR CLARKE: Exactly. And you look at the hierarchy. I gave you the example of tyres earlier, of the two processes. In one case, reuse, of course, is always a higher echelon in the priorities, or in the hierarchy, than is recycle. But there are some questions there, and I think I could refer that example that I've given in my answer.

MR WEICKHARDT: Given that we are where we are now and there is this sort of community attitude towards incineration, if you were the benevolent dictator of Australia and all wise, what would you do, given your background presentation? How would you try and change the situation?

DR CLARKE: I would look in the future to seeing what are the landfill requirements at the moment; how we can best use those landfills, if we have a much lesser amount of waste going to them; how we can probably make their management better, and then talk to the community and say, "Well, let's have a look at this other process that's going to be safe. We can put it into industrial areas inside the city. We are going to have less haulage and material going through our cities, which is very important. Then we can have a more certain future that whatever is in those landfills won't come back and bite us."

MR WEICKHARDT: You referred, I think in Ireland, to them depoliticising this by appointing some independent commission.

DR CLARKE: Commission, yes.

MR WEICKHARDT: What is the remit of that commission, how does it work and - - -

DR CLARKE: I would have to get you a reference to that, but apparently the government decided, with all of the pushes and pulls from some of the NGOs, that they needed to take it out of the hands of the politicians and they needed to put it more into the hands of technocrats. I can see the point of doing that and I would suggest that they would have had to set up some guidelines, like the European guidelines on incineration, and say that, "We'll follow this where it's going to be." I don't know, but if I was going to do it I would then say, "Well, what sort of industrial area can we put this into and what has to be the boundary?" I would have to get the details of the Irish regulation.

MR WEICKHARDT: In your opinion, is that actually working in practice, in a sensible sort of way?

DR CLARKE: Yes. I think it works throughout Europe in a sensible sort of way, and in Japan. I remember now one of the stories that - sorry.

MR WEICKHARDT: I didn't just mean incineration; I meant the sort of depoliticising of the decision process, their commission approach.

DR CLARKE: I would like to see, in another couple of years, how it has gone down, and wait for a couple of elections to have gone by. Of course, things will become very political again if there is a failure of something.

MR WEICKHARDT: Okay.

DR CLARKE: But I wouldn't expect failures.

MR WEICKHARDT: Thank you very much indeed for your submission. It has been very interesting and thought provoking. I think you mentioned some other people in the audience who might have something to say. If they have the time, when we finish the other schedule, they are very welcome to make an appearance before the hearing, but we don't take comments from the floor.

DR CLARKE: Okay. Perhaps one or two of my colleagues might like to do that. What time would that be, Mr Commissioner?

MR WEICKHARDT: Let's adjourn this now and we'll just check where we are in the timetable.

DR CLARKE: Okay.

MR WEICKHARDT: Thank you very much indeed for your submission.

DR CLARKE: Thank you very much.

MR WEICKHARDT: We'll now adjourn briefly.

MR WEICKHARDT: We're going to have a brief comment, hearing from Dr Patrick Glynn from the CSIRO. If you could introduce yourself - your name, position and for whom you're appearing, please.

DR GLYNN: I'm Patrick Glynn. I work with the CSIRO in exploration and mining and my role up there is looking at mine health and safety. Ostensibly we're talking about miners and generally the operation of the mines. I was asked about eight years ago to have a look at a situation where the coal industry emits about 7 per cent of the greenhouse gas emissions from Australia. They produce about 2 per cent of the GDP. Most of the greenhouse gas emissions were from fugitive methane emissions from the mining process for coal. The major problem with the mining process is that they produce three consistencies of methane gas: pre-drainage gas before they mine, which is about 200 per cent pure, post-drainage methane which is about 40 per cent pure and a trace methane level in ventilation air for ventilating the underground mines.

Unfortunately the ventilation air accounts for about 60 per cent of these fugitive emissions. The problem with ventilation air is that the trace methane level is below 1 per cent. Methane gas is a very homogenous gas; very difficult to burn between its lower and upper flammability limits, which are 5 to 15 per cent. The problem was thrown at us, as I say, eight years ago. We had one mine throwing out 80 megawatts an hour of energy into space by way of methane gas. To actually take the trace methane out of the air you have to put it through a process of very, very hot combustion; about 1000 degrees Centigrade for a period of one-third to a half a second.

Conventional combustors would not do this so we had a look at old technology, which was a rotating kiln, also used by the cement industries. The average coalmine in Australia produces - well, at that stage - about three and a half million tonnes of coal per year and about 800,000 tonnes of reject or waste coal. Now, the waste coal had a calorific value of about 50 per cent of good coal; that's about 14 megajoules per kilogram. We developed a system where we could burn this waste coal and use the temperature generator to oxidise the ventilation air. So we put the ventilation air in as the combustion air entered the combustor.

During this process we also realised that once we could operate the system stably we could also use other fuels, hence we could use municipal waste. We could use chicken litter, which we've tested in a gas. The other interesting thing about it is rotating kilns have a very high thermal mass. Because they have a very high thermal mass it means that you can actually change, in real time, the fuel the going in. So if you are putting in fuel with too low a calorific value you can actually change the hopper and put in good fuel. Because of the thermal mass your temperature doesn't drop low enough to cause problems with whatever you attach to the end; whether it

be a steam turbine or a gas turbine.

We also decided that gas turbines were the way to go because there's an awful lot of waste produced in Australia, at around 15 to 20 thousand tonnes a year. At the moment this is not economically viable to produce energy from because the conversion rates are about 18 per cent calorific value into energy out. If we can raise that to above about 40 per cent it then becomes economically viable and the normal incentive systems for these things will work on a return investment of four to five years.

MR WEICKHARDT: Sorry, can you just clarify? What does the 18 per cent figure relate to?

DR GLYNN: The 18 per cent figure relates to the potential calorific value of the fuel going in.

MR WEICKHARDT: Which fuel in that case?

DR GLYNN: It doesn't matter whether it's coal or a gas or woodchips or whatever. As I said, there's an awful lot - 15 to 20 thousand tonnes a year of waste by-products - produced which at the moment are put into landfill because it's just not economically viable to burn it. They're actually very suitable for burning.

MR WEICKHARDT: But 18 per cent is a pretty low conversion.

DR GLYNN: Absolutely. This is with standard shank-type steam turbines. What we did is we took an aeroderivative gas turbine, raised the temperature from the normal temperature of a steam turbine - between 350 and 500 Centigrade. We raised the temperature to about 1000 degrees Centigrade which gave us a good enough temperature to operate a gas turbine. Now, once you go into gas turbines, if they're recuperated you inherently jump to double the efficiency - or 36 to 40 per cent efficiency. This makes it economically viable, both on the costs of handling these fuels, burning them and a decent return on investment.

About five years ago we took a patent out on this. We have the process - all of these technologies are around a very long time. We took a patent on the package and we've licensed this to a company called ComEnergy. When we took this project to the mining companies, although they actively supported it with grants and that kind of stuff, to date not one mining company has taken up the option of generating electricity from the waste coal. The average mine site could generate up to 100 megawatts and have a return on investment - on a $90 to $100 million investment - of about 18 months to two years because they would be producing base load electricity. So far no mining company has taken this up and we are of the

opinion that maybe it needs the assistance of somebody saying that it's not permissible any more to produce waste coal and just allow it to spon com.

MR WEICKHARDT: The waste coal itself is at the moment where? Just in stockpile dumps, is it?

DR GLYNN: Since the 80s they now re-bury the coal. Up on Peak Downs there's about 20 million tonnes of it sitting on the surface. Up until the early to mid-80s, by law they weren't allowed to re-bury the waste coal because they believed, at that stage, that they could burn it effectively and produce energy from it. But since then they now attempt to re-bury the coal. The coal has still got quite a bit of carbon content which leads to spon comming. They've developed methods for burying it where they interleave it with clay, but the jury is out on how effective that is.

MR WEICKHARDT: All right, well, thank you very much indeed for your submission and appearance. We'll adjourn very briefly now and move to our next participant.

MR WEICKHARDT: If I can get you just to say your names and give your positions and organisation to start with, please.

MR FERGUSON: Good morning, commissioner. My name is Bob Ferguson and I represent Compost Queensland. I'm the current chair for Compost Queensland.

MR WEICKHARDT: Yes.

MR DOCKRAY: My name is John Dockray. I'm the current secretary of Compost Queensland. I do contract work for a number of the composters under my company name of BelBio.

MR WEICKHARDT: Thank you. I have received a draft submission from you which is marked "in confidence". Is this still in confidence?

MR FERGUSON: No, that's fine. I've actually got a bit more formal submission that I've done up over the weekend. So I will be submitting that, with your indulgence.

MR WEICKHARDT: If you send that to the commission that will be good. If you want to make some general comments - you can assume I've read what you've provided so far, but if you'd like to make some comments that would be helpful. Thank you.

MR FERGUSON: Today what I wanted to do was just give a very brief background on where the compost industry is at. I want to look at the recovery and beneficial reuse strategies for organic materials and then I guess in conclusion I would like to obviously say what the compost industry are seeking through this submission. I will actually be referring to pages 3 to 6 of the handout provided, and unfortunately I didn't bring a PowerPoint presentation. Organic waste can be converted into useful resources through processes such as composting and anaerobic digestion. There are large industrial-scale organic processor businesses all through Australia.

Compost Queensland represents Queensland alone, but Compost Australia basically represents a division in each state. Just recently Compost Australia has submitted a road map, a compost supply chain road map. It was actually tabled at Australian Parliament House on 13 February this year. That sets out basically how we are going to achieve a viable and sustainable organics recycling industry across Australia. So that's on the public record. Today I am going to endeavour to go through about nine points. So it's a fairly large number of things to go through. I won't actually read straight from the page 3 to 6. I would probably prefer just to go through the points.

MR WEICKHARDT: I think that would be desirable, and if you can assume, as I say, I've read that. It gives more time for some discussion.

MR FERGUSON: Good. The first point I would like to make is currently in the composting business there are too many regulatory constraints placed upon facilities. One that I could readily identify with is probably the EPA and local government constraints, and obviously with composting facilities there are certain things involved - leachates, odours, et cetera - and there are a lot of costs borne - I guess compliance costs. I've got one example which I can share with you fairly factually. One company has spent $180,000 just this calendar year to comply with those constraints. So that's a fairly significant cost when you've got to sell products from there.

The second point: there are no environmental levies to dissuade landfilling - that's in Queensland. Down south I believe there is in excess of $20 per tonne as a levy so that you're not getting organics into landfills. So currently that puts Queensland behind the eight ball, or composters in Queensland. Point 3: there will always be a percentage of green organics that have to go to landfill and that's purely because of contaminants - your plastics, your glass, your metals - and we shouldn't say that will always happen but that's just fact; people being lazy, et cetera.

The contaminants, I guess, affect all of the end users. One end user group being domestic consumers, obviously with things like compost, if you've got plastics and glass where it's visual for mulchers; if you're looking at the farming community, it's a very real threat there if you're looking at, say, root crops, things like carrots, potatoes; any contaminants, the smallest piece, glass or metal, that actually gets into the fruit itself; it goes to someone like Coles or Woolies. That's the last time - and there's litigation from it, that's the last time that that farmer will deal with those chains.

So the ideal, of course, is to get all contaminants out of green organics and then we could use them all and they wouldn't have to go to landfill, but I believe unless there is an education program, that's the reality we've got and that's what I deal with. Point 4: recycled organics, they solve the big two problems in Australia, in my opinion. One is lack of water and I think that's - doesn't matter if you're in Queensland or what state, water is a precious resource. Obviously organics, mulches, compost, they retain moisture and it's ever so precious as far as the cost.

The second point is land degradation. For too many years we have used too many chemical fertilisers to grow our crops. You are getting the acid sulphate soils, et cetera. By putting organics back in you can start to arrest that degradation. We are not talking about organics being instead of chemicals. They can obviously be used in conjunction with chemicals, but as an adjunct to help retain the chemicals

and to make them more effective. But I think the water is the main point. Point number 5: the industry generally needs additional funding for research and development. We have to show the advantages to the farming community, mainly, of using a compost. So you need things like in-field trials to demonstrate better yields, more sustainable practices for the land, et cetera.

There's been a bit of work done to date and it's largely been done privately. I think our firm and another couple of firms have done work at Lockyer Valley but the funding there, which was in conjunction with the Brisbane City Council, has run out and if you're doing a field program to demonstrate cropping, different temperatures, different soils, et cetera, you need several years of research data. One year isn't enough. So that's a very high priority from the firm I represent but obviously to the compost industry in general.

Number 6: I believe that there should be a zero waste target. We talk about it; very hard to achieve, as we all know. Landfills obviously will be around but with organics that's something that can be recycled. We have got the business, we've got the infrastructure, we've got the markets. It's really just getting it to market. Statistics - I don't have an exact statistic but we are looking probably at about 20 per cent of landfill space will be taken up by green organics. If you can reduce that, albeit the contaminants side - arresting that - that's a huge amount because landfills are such a finite resource; knowing what's in the backyard, they're not making any more holes in the ground and it is a problem all over Australia. Look at Sydney, Melbourne and Brisbane.

We know currently that of the green waste, say, in Brisbane city - that's probably the best example; it's a fairly big municipality - 60 per cent of the green waste gets diverted to composting operations through transfer sites but the other 40 per cent goes into landfill. So what I'm saying is that of the actual landfill, there's 20 per cent of the total is green. Point 7: there is a vehicle in place for funding, distribution of funding if there are levies, et cetera, put upon green waste or contaminated green waste going into landfill. The EPA's Sustainable Industries Division is a perfect vehicle for funds distribution. We are not saying bring the funding and levies to someone like Compost Queensland. You've got an ideal vehicle there. There are vehicles but that's in place as we speak, and I think it's being underutilised.

Point 8: I think with green waste in general, or green organics, the past awareness has been really through the green and, say, the planet-type movements. So everyone gets warm and fuzzy: we need to not put this material in the ground, whether it be green organics or plastics or whatever. Really the next big driver is education and, from the composter's side, we want people to be educated to do the right things contaminant-wise. We have got the process to handle these materials but

we can't handle them if they've got the contaminants in them. So I think education is absolutely paramount from the point of contaminants and also - well, usage is probably secondary to that.

Finally, there is a price barrier to farms, so we can go out, we can do the R and D, we can prove that the compost will provide benefits from moisture, improving soil health, which suppresses disease, et cetera, but the problem is the tyranny of distance. If you look at, say, Brisbane's fruit and salad bowl, that's the Lockyer Valley. It's over 100 kilometres from the nearest composter and when you start looking in real terms, the compost might be, arguably, $20; the freight is $30. Then if you stack that up against traditional fertilisers, for argument's sake, you can get a known fertiliser value, say nitrogenous fertiliser - say nitrogen, urea, I think 450 or 500 tonne, John, would be about the sort of figure - but you know what you're getting for your buck there.

So what we've got to do firstly is convince the farmers, through R and D and trials, to use the material, and then we've got to get it out there. So whether it be by freight subsidies, whether it be tax incentives to the end user, rates or water charges, we've got to break down that barrier. I read in a recent report - I think it was a submission, probably, from Compost Australia to the commission, there is something like 441,000 tonnes of excess material in Sydney, as in forest compost. We do have an excess of compost in Brisbane. I could speak for myself, my firm that I work for and also the firm that John works for, and I think very similarly other composters are largely overstocked.

Now, the Brisbane market, saturated, just can't get it out there to where it's needed - to the farmers, vegetable, fruit and also viticulturists. South Australia is a good example. There's a firm down there called Peats Soil. They do a lot with the wineries in South Australia because they are so close and I think that's the key. They haven't got that tyranny of distance. They are getting tremendous yields and also, as I said, disease suppression, et cetera. So number 9 could be number 1 or vice versa, but they're sort of the nine points I would like to make for today's submission.

MR WEICKHARDT: Okay, thank you very much indeed. John, did you want to say anything now?

MR DOCKRAY: No.

MR WEICKHARDT: Okay. Well, can I turn to this issue about the markets for compost, because this genuinely seems to be a common sort of problem. People talk about the technical feasibility of making compost and yet say this is a product looking for a home. I understand, if it's a matter of demonstrating the efficacy of this product to farmers, that there might be sort of a period that the industry needs some

help, but the laws of physics mean that this is a product that has got a pretty high moisture content and probably a fairly low nutrient content compared to some of the alternative fertilisers, and so I'm not sure how you're ever going to overcome this problem of freight and the tyranny of distance, given the fact that the waste is all generated in urban areas and a lot of our agriculture is in fairly remote areas.

MR DOCKRAY: Yes, and I'd say even for Brisbane - if you're just looking at the Brisbane market, which is fairly saturated, to even make the dollars stack up there most composters take in a particular waste as a gate receivable-type fee, your liquid waste, your things like biosolids, sewerage sludge, your grease trap wastes, manures, et cetera. They charge a fee there to balance the books. So not trying to cry poor, but that already happens. So we sort of run the operations - or composters run the operations as freely as they can. They use this offset cost.

The market is saturated, so how do you reach the market? That's the age-old problem. We can convince them, I think, with more trials. Again, I don't know what the answer is to the freight. Even Brisbane itself is a fairly big city to cross, the same as Sydney and Melbourne. But I think with all of the major cities, apart probably from Adelaide, the producers are a fair distance out. It's not a matter of rail, because you've got to get it to a railhead. By the time you take it to the railhead somewhere in Brisbane, and put it on the railhead and they take it out, the cost of that is as much as taking it.

MR WEICKHARDT: Now, one of the issues that you referred to was legislation and rules governing both the manufacture and I suppose the quality of the compost itself, and you talked about compliance costs, yet I guess some of this regulation is in place to try and avoid long-term problems. I've heard it said that the regulations which govern heavy metal content in compost and pathogens in compost are causing some of the product that has been made to be diverted to landfill as opposed to being used for agricultural purposes. Yet surely, you know, there's a legitimate concern that society would have that if compost containing large quantities of toxic metal residues was used in agriculture you would create another problem.

MR FERGUSON: Well, most definitely. It is very heavily regulated. I guess it came initially from the United States, then to the New South Wales EPA, and it has filtered through. Things like cadmium, that's very low numbers on that. Things like zinc, I think there could be a relaxation on that. John is more from a scientific point of view, but the regulation on that is 200 parts per million is the top level. Now, there are farmers literally crying out for extra zinc in their crops, and I think John - - -

MR DOCKRAY: Zinc and copper would be the two.

MR FERGUSON: Zinc and copper. So we're hamstrung in selling it above that level. We can't sell above that level. We're governed under our licences, whereas certain parts of the farming community want those elements. That's quite opposed from the nickel, mercury and whatever. So, yes, there will always be X amount going into landfill and that would be from - there's several sewerage treatment plants in Brisbane. Some of those have a heavier content than others. Some are very heavy industry. That's fine, but maybe a fraction of that needs to go to a landfill component. Some sort of relaxation on some of those other limits would certainly assist. I'm not a scientist. I'm a civil engineer by trade.

MR WEICKHARDT: Do you have any comment on the alternate technologies for actually making compost? The sort of composting by windrows as opposed to anaerobic digestion and fermenters?

MR FERGUSON: I think the majority around Australia are by windrow fashion. I think if you get into Europe, with large populations and the cost they can do it through, you know, inside buildings, et cetera. I think Australia's trouble is that the population base is a problem. I don't know if the figures support it, but I would think - knowing a lot of the operators around Australia I would say probably 95 per cent would be windrow operation rather than through an anaerobic-type digestion and those sorts of fashions.

MR WEICKHARDT: Does that cause a problem with greenhouse gas emissions from that composting process itself?

MR FERGUSON: There has to be some gas off and obviously in the early stage of composting there's resultant odours. I guess that's where we have that fine line with DEH and EPA around Australia. It doesn't matter where you site a composting facilities, you've always got neighbours. I remember a firm I was with and a particular person spent several million dollars on a facility - a different facility - and they said, "Well, your type belongs out at Roma," but I think there are neighbours at Roma, the same as there are in Brisbane or Sydney or wherever. I think that's part of the problem with gas emission. I don't know. John, have you got any comment there?

MR DOCKRAY: Well, it's an issue, but by composting we reduce the amount of green waste into a product that is more benign and more beneficial to the soil. There are virtually no weed seeds or pathogens and if we can avoid the contamination we have a far better product that is going to help the farming community and people around Brisbane save water and grow their vegetables and flowers more beneficially.

MR WEICKHARDT: You mentioned 440 tonnes of excess compost in Sydney. How much excess compost is there in Brisbane?

MR FERGUSON: I haven't done my numbers but I know, from two firms, there is virtually 45 to 50 thousand cubic metres. Divide that by two to bring it to tonnes. That's just two firms and there would be probably around about six main composters in Brisbane. I don't know of any composters that have got spare space. I think they're pretty well up to the hilt, you know.

MR WEICKHARDT: So in these circumstances have we taken green waste in, applied some further resource and converted it into another product that is effectively a waste at the moment? I mean, if there is not a market for it are we actually making progress here or not?

MR FERGUSON: Yes. Are we going to compound the problem in a different area? That is, are we turning the green waste problem into a compost problem? We know the markets are there, it's just the markets aren't where we are, or aren't where the composts are. To take a composter and do the work out there, you have still got the same freight component. So I guess it's chicken and egg, isn't it? Put it into the landfill, it's going to degrade in the landfill. That resource is worth - I don't know what the landfill cost is these days but probably 70 or 80 dollars a tonne, I would think, somewhere in that sort of number. So the cost of bearing the green waste, for argument's sake, is going to be a lot higher than the offset of freight, if that makes sense.

MR WEICKHARDT: Except that I would have thought the alternative cost of landfilling would actually allow the composter, as you mentioned, to charge a gate fee for taking the green waste. So in one way you are already getting support from that.

MR FERGUSON: Yes. Well, the trouble with Queensland is that you haven't got the levy.

MR WEICKHARDT: Where the levy is highest, in New South Wales, you have, you mentioned, 440,000 tonnes of excess material.

MR FERGUSON: Yes.

MR DOCKRAY: They are even further away from agricultural markets. You have to go over the Great Divide and that's a big impasse. You've got population on the coast and the market is over the divide.

MR WEICKHARDT: Well, I am not sure we are ever going to solve the problem of, as I say, rural areas being separate from urban areas. There is probably a law of physics around that.

MR FERGUSON: I think if you look at some of the smaller shires, like Hervey Bay is one I can think of - they do a lot of compost; they get rid of all their compost at a higher figure than Brisbane. They actually get a premium for it. They have got a balanced book. I don't know how they can balance the books and the others can't. Coffs Harbour is another - in New South Wales. It's a very successful operation, as well. They are few and far between.

MR WEICKHARDT: Well, I guess in a rural community you may have a better sort of disposition of some waste and some market for the resulting compost cost. Okay. You mentioned that in Brisbane 60 per cent of the green waste goes to composting and 40 per cent goes to landfill at the moment. Is that because the remaining 40 per cent is too badly contaminated to use as a feed for compost?

MR FERGUSON: Yes. Just to clarify that, 60 per cent goes through transfer stations, so they could become compost or could become mulches.

MR WEICKHARDT: Right.

MR FERGUSON: In that division again there's a fair bit goes on mulches, for things like highway projects, et cetera. The 40 per cent that goes in, it just goes in through wheelie bins, et cetera; mainly through domestic household waste.

MR WEICKHARDT: All right.

MR FERGUSON: That's a fraction that could easily be separated. Of that fraction, that 40 per cent, yes, there is a percentage of contamination but that's really just education, basically. To give an idea, there is around about, from the figures I have been given, about 50,000 tonne of green waste goes to landfill annually.

MR WEICKHARDT: Okay. Now, you mentioned in your submission which - you don't mind me quoting from this?

MR FERGUSON: No.

MR WEICKHARDT: You say:

> All levels of government - federal, state and local - should adopt a zero waste policy to ensure organic materials can be effectively recovered for beneficial use. Generators of any recyclable organic materials that end up in landfill should be penalised by way of a levy or tax.
>
> Now, are you saying whatever it takes? We should tax the hell out of organics

entering the waste stream so that we can make compost out of them?

MR FERGUSON: Not as such. I think there needs to be some sort of tax on it but I'm not in favour of taxes for the sake of taxes. This industry isn't after a handout as far as subsidies. There has got to be some sort of balance and we are always after balance in life. I don't know quite what that balance is, unfortunately, but all I know is that they have got the levies down the south and it certainly should help.

MR WEICKHARDT: Yes.

MR FERGUSON: It should help.

MR WEICKHARDT: Yes. You also say in this Lockyer Valley Returning the Favour project, "Each compost product supplied had been tested to ensure compliance with Australian standards." Is there an Australian standard for compost?

MR FERGUSON: There is, yes, the same as potting mixes. There is a standard AS4454 and that looks at certain physical parameters, and the same for soils. Soils has a 4409 as the Australian standard, and for potting mix you've got your ticks; your red and white and black and white ticks.

MR WEICKHARDT: Right.

MR FERGUSON: Exactly the same sorts of - they're different test criteria. Then apart from that then you've got your things like your heavy metal, pathogenic-type levels also. There is a lot of testing, a lot of criteria to be met for the compost to be used.

MR WEICKHARDT: So those heavy metal and pathogen levels are cited in the Australian standard, are they, or are they separate?

MR FERGUSON: They're cited in the environmental protection, using the licences to the composter, so there will be a set of those in there.

MR WEICKHARDT: Okay.

MR FERGUSON: The actual Australian standard doesn't cite those as such.

MR WEICKHARDT: Right. Because certainly one person appearing at the hearings - I have forgotten where now - said that in New South Wales some regulations on heavy metals and on pathogens had been particularly problematic for the industry recently.

MR FERGUSON: It's always a balancing act. If you're using - basically, this comes from the inputs, your things that you have to use - biosolids, which are another waste; probably biosolids more so than manures, et cetera. There are always going to be pathogens present. What you're trying to do is eliminate those just through temperature, basically. And again, the heavy metals - it's a dilution-type thing, if the level is too high. If you're making, say, a soil, you will have a percentage of compost to inorganic - to soil and ash, et cetera, and that balances that out.

MR WEICKHARDT: Well, certainly this Lockyer trial, where you say, "The Department of Primary Industry conducting a two-year scientific trial" - I mean, it seems to me to be eminently logical, if you've got a government instrumentality that most people would trust and respect in that area, who demonstrate benefits of the product, then that may give some extra market pull. But I guess inevitably you are competing against alternates.

MR FERGUSON: Yes, most definitely. I guess that compost and mulch is the low end of the food chain. The chemicals have been around forever and a day and, as I said, they are known. You've got your NPK. They are known factors - - -

MR WEICKHARDT: How is the price of compost being set, in comparison to those products? Is it being set on the nitrogen value or a mixed nutrient value?

MR FERGUSON: Probably more just from a mixed nutrient. John, I don't know if you'd like to elaborate there.

MR WEICKHARDT: Or is it the compost market itself and the number of competitors that are sort of effectively slugging it out and setting the price?

MR FERGUSON: I think the simplest way of saying it is yes, to a certain extent. Saturated market, market forces, competitors literally slogging it out in the trenches. It's not rising. I've been in the industry for 25 years. I've blended soil, which is largely compost. Probably back in the 80s it was around about $25 a cubic metre. The price now is less than 20. Compost, similar. I don't know how you ever get over that mentality of the price. Every other commodity goes up - whether it be concrete, steel or whatever, milk. Yes, that is a problem in itself.

MR DOCKRAY: Compost is only one fraction of the cost to, say, a primary producer. The major impasse, as we've mentioned, is the freight. Because it's a high volume, spreading costs become quite a - so just to break it down. If you're paying $20 for the compost, you may be paying as much for freight and then $6 to spread it on the land. If we're talking about rates, a minimum of 10 cubic metres or 6 tonne per hectare. So we're not just talking a bag or so many bags of fertiliser per hectare.

What the farmer is getting for that is all this humus and organic carbon that is so essential for the sustainability of the land. AgForce have just spent two million on an ad saying how sustainable their farming practices are. 40 per cent, according to Queensland University, don't agree, in the cities, that they are sustainable, and I'd be one of them.

MR FERGUSON: I think it gets back - the compost is more than just the fertiliser value; it's really the soil health, and it has been demonstrated that suppression of diseases - you know, apart from moisture value - so it has got a three-pronged effect, not just the fertiliser value. That's what we've got to, I guess, sell to the farming community. We've got to prove it to them. They haven't got to do anything. They've been farming for 200 years in that fashion.

MR WEICKHARDT: That's true, but I think farmers are looking to try to, all the time, improve their efficiency and effectiveness. If you have some attributes that are important to them, I would have thought if you prove that you would see a greater receptivity. We have heard some comments that some composts from different feedstocks are so heavily contaminated with glass and plastic that their use has either given the industry a bad name or they have been confined to council or government-owned properties. Is this a problem you are aware of?

MR FERGUSON: I think that really gets back to the education to keep the contaminants out. A lot of composts have been used, things like mine rehabilitation, et cetera.

MR WEICKHARDT: Sorry, used?

MR FERGUSON: Things like mine rehabilitation, et cetera.

MR WEICKHARDT: Yes.

MR FERGUSON: Or even landfill revocation, because of that contaminant level. It doesn't take much glass. One bottle in a green bin - if you have green bins in the state you come from - that's all it takes. It goes through a crusher and becomes a thousand pieces, and that's it. Really, just one piece of glass - as I was citing earlier - from a farmer, contract grower, to Woolies or Coles is enough to finish that contract. That's how serious, because again litigation sort of follows it.

MR WEICKHARDT: Can that glass contamination actually get included in a carrot or a potato?

MR FERGUSON: It can be grown into it. Actually, we were having a discussion down in the foyer before we came in. John, you are more from the crop side, so - - -

MR DOCKRAY: It is a concern, particularly in carrots. Any hard object, carrots will grow around it and full carrots can only be sent to juice. If there is a contaminant in a potato and someone finds it then there's going to be hell to pay.

MR WEICKHARDT: Yes.

MR FERGUSON: Or it becomes an inferior-grade juice or something.

MR DOCKRAY: I think it worthwhile just commenting on another initiative of the Brisbane City Council, which is their kerbside collection, which is purely voluntary, where households are putting out up to two cubic metres of green waste. The industry supply compost, so they can see the benefits - and that green waste could definitely be recycled.

MR WEICKHARDT: What happens to that at the moment?

MR DOCKRAY: It's being collected by the Brisbane City Council, going to transfer stations and being ground up, and the compost is wanted because it's so clean.

MR FERGUSON: I think certain shires and councils have done a lot more work as far as keeping their transfer sites - well, I think they have - keeping plastic, et cetera, out. I know that Brisbane and Doncaster have done a lot of work on that. Still, there's just that one careless person that destroys it.

MR WEICKHARDT: All right. Thank you very much indeed for your submission and for appearing at the hearings.

MR FERGUSON: Thank you for your time.

MR WEICKHARDT: We'll just adjourn for a couple of moments.

MR WEICKHARDT: The next participant in the hearing is Prof David Moy. If you could just give your name and the capacity in which you're appearing, that would be helpful, thank you.

PROF MOY: Thank you, Mr Commissioner. David Moy appearing on behalf of Waste Management Association Queensland, and my own consultancy TechSearch. I'd like to make a few points in addition to a submission I presented to the inquiry in writing on behalf of Waste Management Association Queensland.

There's a lot being said about the waste hierarchy. We should recognise that it deals almost entirely with end-of-pipe solutions. They are all there to recover, remove or do something after we produce the waste, and I believe there's a strong emphasis needed on the wasteful consumption issue. When we see that there are over $5 billion of fresh food waste produced in Australia each year - and we take the Australia Institute's data on that - it highlights the issue. A culture change is needed and I think if we take into account that just about everything we eat, produce, develop, ends up as waste, it highlights the value of this industry in Australia and its importance in both the community and political scenario.

I'd also like to make the point that we often overlook the waste and resource recovery infrastructure as a valuable asset, equal in the community to our sewerage treatment works and so on. We forget, for example, that the first role of landfill is in public health management. Until governments decide to take the putrescing material out of our landfills we don't have any other adequate means of managing pathogens, disease vectors and the like.

I'd like to stress the difference between the large urban situation in relation to waste and resource recovery and the regional situations, even regions where we have a significantly sized town surrounded by the community. Data, classifications and definitions are critical. There are so many views on what is meant by a particular term and until we have data we're not going to be able to make useful decisions, and we can't have data until we have a consistent classification of what we're talking about in the waste stream area and the resources.

ABS is probably the only organisation that can overcome the secrecy requirements of industry. Attempts by Queensland government to obtain data have been met all the time by the fact that industry wants to keep them confidential, and I have personal experience in that area, trying to do work for government. And local government generally have little knowledge of their local area waste and resource generation outside their own municipal waste, and little interest, and this needs to be modified.

There's a valuable lesson for us in the technologies that have proved to be

unsustainable, despite their ability to work. There's much research needed to downsize the technology that is available, to be appropriate to the community size. This applies particularly in our regions.

I note that there are many applications that exist for virgin and other materials that present opportunities for patents to be selected in relation to secondary resources. I am aware of some companies who are doing this, who are identifying and claiming patents, but then they don't have the wherewithal, the resources, to develop those patents further, and I think this helps Australia lose opportunities to develop, to be innovative in achieving new materials and products out of secondary resources.

Anything that can be done to improve supply issues must be of benefit to the waste and resource recovery. As a left field comment, one of the things that should be looked at is the diversion of trade waste from our sewers. We keep hearing about contaminants from biosolids affecting composts and the like. Mainly those contaminants come because we consistently discharge industry wastes into a common sewer with relatively pure biosolids.

There's another final point I'd like to make, related to life cycle assessments. We urgently need environmental costs and benefits to be included in pricing and market structures, because it's only when we do that that some of the cost structures that impact waste and resource recovery can be catered for and allowed for. There's much else I'd like to say, having worked in this industry from both a research industry and government perspective for many, many years, but I think that will do, Mr Commissioner, at this stage.

MR WEICKHARDT: Thank you very much indeed, David. A couple of questions. The issue you raise about patents being taken out on secondary resource recovery but not used: I wouldn't want to claim myself as a patent expert, but my rudimentary understanding of patent law would say that if somebody takes out a patent and uses none of it, then their claim to that patent pretty soon lapses.

PROF MOY: That's right, but the issue is that they can continue to look like they're developing a patent and get additional time frames involved there. I think the bigger issue probably is that there are one or two companies doing that but there's a heck of a lot of opportunities there that we're not benefiting from in terms of technologies and so on that are available. I know of one company that a couple of years ago had 20 provisional patents tied up, and they couldn't do anything about them because they didn't have the resources, so that delayed the opportunity. And of course - very significantly - you don't publish those, and there are very few other people looking for it. I think there's an area there that the industry could benefit from and I suspect it's got to be the research community or the applied research and development area

that might start to explore those.

MR WEICKHARDT: I'm a little surprised about that, because the one feature about a patent is that it does have to be published if it actually is granted. Anyway, moving on from there, you talked about the potential diversion of trade waste from sewers. This is in some ways outside our terms of reference, which are I think really focused on municipal waste in the main, but a comment was made to us in the hearings in Canberra by the Cement Industry Association, who said that actually in Victoria it would be possible to recover energy from some sewage sludge - it's got quite high calorific value - but a factor inhibiting that is the heavy metal concentration in some of that sewage sludge. Particularly I think they referred to mercury. If that's the case, is this material really all that recoverable?

PROF MOY: I worked on a project for ACT and we solved that. They actually combust their sewage sludge currently and sell the ash as a fertiliser. The mercury goes up the stack and becomes methyl mercury, which is very toxic in the environment. The simple answer was simply to require all dental establishments to insert a trap for mercury from amalgam fillings within their plumbing at about $1000 cost, and at that time ACTEW was looking at risk based trade practices. I acknowledge the fact that it seems to be outside the inquiry, but engineers in local government have used this as an excuse for not working together for a long, long time. Where we have waste water, sewers are a water engineer and waste is a waste engineer problem. That stops us doing things that we need to do, particularly whereby our solids are concerned. Could I just also add to that: water and energy are important parts of solid waste fuel. We can't ignore them.

MR WEICKHARDT: Thank you very much indeed for your comments, and thank you for appearing. Ladies and gentlemen, I think that concludes today's proceedings, but for the record is there anyone else who wants to appear today before the commission? No? In that case, I adjourn these proceedings, and the hearings will resume in Sydney tomorrow. Thank you.

AT 12.45 PM THE INQUIRY WAS ADJOURNED UNTIL
TUESDAY, 28 FEBRUARY 2006

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