
COMMONWEALTH OF AUSTRALIA

# Official Committee Hansard

# SENATE

## RURAL AND REGIONAL AFFAIRS AND TRANSPORT REFERENCES COMMITTEE

**Reference: Australia's future oil supply and alternative transport fuels**

FRIDAY, 9 JUNE 2006

SYDNEY

BY AUTHORITY OF THE SENATE

**INTERNET**

The Proof and Official Hansard transcripts of Senate committee hearings, some House of Representatives committee hearings and some joint committee hearings are available on the Internet. Some House of Representatives committees and some joint committees make available only Official Hansard transcripts.

The Internet address is: **http://www.aph.gov.au/hansard**

To search the parliamentary database, go to:
**http://parlinfoweb.aph.gov.au**

**SENATE**

**RURAL AND REGIONAL AFFAIRS AND TRANSPORT REFERENCES COMMITTEE**

**Friday, 9 June 2006**

**Members:** Senator Siewert *(Chair)*, Senator Heffernan *(Deputy Chair)*, Senators McEwen, Nash, O'Brien and Sterle

**Participating members:** Senators Abetz, Adams, Allison, Bartlett, Bernardi, Boswell, Brandis, Bob Brown, George Campbell, Carr, Chapman, Colbeck, Coonan, Crossin, Eggleston, Chris Evans, Faulkner, Ferguson, Ferris, Fielding, Hutchins, Joyce, Ludwig, Lightfoot, Lundy, Ian Macdonald, Sandy Macdonald, Mason, McGauran, McLucas, Milne, Murray, Nettle, Payne, Polley, Robert Ray, Santoro, Stephens, Trood, Watson and Webber

**Senators in attendance:** Senators Heffernan, Joyce, Milne, Nash and Sterle

**Terms of reference for the inquiry:**

To inquire into and report on:

Australia's future oil supply and alternative transport fuels, with particular reference to:

a. projections of oil production and demand in Australia and globally and the implications for availability and pricing of transport fuels in Australia;

b. potential of new sources of oil and alternative transport fuels to meet a significant share of Australia's fuel demands, taking into account technological developments and environmental and economic costs;

c. flow-on economic and social impacts in Australia from continuing rises in the price of transport fuel and potential reductions in oil supply; and

d. options for reducing Australia's transport fuel demands.

## WITNESSES

**Committee met at 9.30 am**

**HUGHES, Mr Gavin, General Manager, CSR Ethanol**

**JONES, Mr Martin Wallace, General Manager, Government Relations, CSR Ltd**

**CHAIR (Senator Siewert)**—I declare open this meeting of the Senate Rural and Regional Affairs and Transport References Committee. The Senate has referred to the committee the matter of Australia's future oil supply and alternative transport fuels. You will be aware of the terms of reference, so I will not go through them in details. The committee was originally due to report on 15 June, but we have been granted an extension to 19 October this year.

These are public proceedings, although the committee may agree to requests to have evidence heard in camera or may determine that certain evidence should be heard in camera. I remind witnesses that, in giving evidence to the committee, they are protected by parliamentary privilege. It is unlawful for anyone to threaten or disadvantage a witness on account of evidence given to a committee, and such action may be treated by the Senate as a contempt. It is also a contempt to give false or misleading evidence to a committee.

If a witness objects to answering a question, the witness should state the ground upon which the objection is taken and the committee will determine whether it will insist on an answer, having regard to the ground which is claimed. If the committee determines to insist on an answer, a witness may request that the answer be given in camera. Such a request may, of course, also be made at any other time.

Welcome, Mr Hughes and Mr Jones. I invite you to make a brief opening statement and we will then ask you questions.

**Mr Hughes**—We welcome the opportunity today to discuss the role that ethanol might play in the Australian automotive fuel fix. CSR have been producing ethanol for over 100 years. We opened a fuel ethanol distillery in Yarraville in 1940, which now operates a polishing fuels dehydration plant. In 1970 CSR fully acquired the Sarina distillery and replaced it with a modern biostil in 1989. Today CSR produces about 60 million litres of ethanol, consuming about 240,000 tonnes of molasses as a feedstock, and about half of its production is going into non-fuel markets with the balance going to fuel and exports.

CSR has had aspirations for several years to further invest in ethanol capacity, and seriously considered an 80-million-litre facility adjacent to our Burdekin mills in North Queensland. This project was delayed due to the loss of confidence in ethanol as a blend stock for fuel in the early 2000s. CSR firmly believe that any new investment in ethanol needs to be internationally competitive. Our current analysis suggests that, due to the high cost of construction of these sorts of facilities in Australia, a 200-megalitre-plus scale plant would be required to achieve sufficient economies of scale and that grain is the most likely feedstock of choice, given its economics.

One of the dilemmas the renewable fuel industry will face is that, unlike petroleum products where everything is linked to the crude oil price, only the final product price of the distillery is linked to crude oil. Distillery co-products, whether they be fertiliser or cane supplement, as well as the agricultural raw materials, all move independently of crude oil. This adds substantially to

the risk of a renewable fuels project adequately providing returns for investors and is a barrier to progress. Nevertheless, CSR and many others are examining the feasibility of a grain based project and, if appropriate risk-sharing strategies can be implemented and off-take arrangements negotiated with large retailers, there is a potential for significant capacity additions to be constructed in Australia.

The long-term future for fuel ethanol lies with cheaper feedstocks, using lignocellulose type bases and technologies, which are still under development at this stage, and it is unlikely that these will be commercial within the next 10 years. My colleague Martin Jones and I will be quite happy to answer any questions that you may have.

**Senator HEFFERNAN**—Under your scenario, what happens after 2011? On Alan Jones' show this morning, my learned friend Barnaby Joyce said that this all falls into a pot of custard after 2011.

**Mr Hughes**—Our view is that, if you are going to build a facility, it needs to be internationally competitive. If it is going to fall into the bowl of custard, as quoted, then it does not really matter whether it is 2011 or 2015. If you are not internationally competitive, then that is going to happen and you are going to have a problem.

**Senator HEFFERNAN**—We should not have an ethanol industry that cannot compete with import parity.

**Mr Hughes**—That is correct.

**Senator NASH**—Given that changes are being introduced in 2011, would it be appropriate to have a review in 2010 just to see if it is still on track and if that subsidy program is in line with where the industry is up to at that point?

**Mr Hughes**—That may be appropriate.

**Mr Jones**—From our perspective, we have been doing economic analyses. As you do more analysis and you get out and you start to develop a project and you test all your assumptions, you will come to a conclusion as to whether you think it can be internationally competitive in Australia or not. It also depends on the kinds of deals you can get with your customers, and most of the major customers that we are talking to would not proceed if they did not think that we were internationally competitive. By 2010, we would have a very good idea about that—much sooner, I think.

**Mr Hughes**—I think sooner than 2010.

**Senator HEFFERNAN**—I am pleased to hear that you would argue that this should not be a prop-up for the life of the industry. This should be sustainable, viable and globally competitive or do not go there.

**Mr Jones**—If you prop it up, you will end up with a multiplicity of small-scale plants and, when it does become internationally competitive, they will still be putting their hands up for

help. My background is in the chemical industry. I grew up under 45, 60 per cent tariffs here. CSR had a chemical company at one stage. None of that is operating today.

**Senator NASH**—How much ethanol does Brazil export per annum?

**Mr Jones**—About three billion litres a year.

**Mr Hughes**—We can probably find out for you.

**Senator HEFFERNAN**—While you look that up, what do you describe as a viable plant? How many million litres is a fair thing for a plant, given that you do not want small plants? I do not disagree with you.

**Mr Hughes**—From our economic analysis, you would need to have a minimum of about 200 megalitres in a viable facility to get adequate economies of scale so that you can compete.

**Mr Jones**—The only numbers on Brazilian exports I have here are projections for 2009 and 2010, which is 5.9 billion litres. These are projections made by a company called Czarnikow Sugar, which we own 40 per cent of. I think it is 3.2 billion.

**Mr Hughes**—That number sounds reasonable, but I cannot quite put my finger on it.

**CHAIR**—3.2 billion now and 5.9 billion projected.

**Mr Jones**—Yes.

**Senator HEFFERNAN**—A viable ethanol plant is, say, 200 megs. What downstream feedstock would that provide to a dairy, for instance, if it were a grain stock thing?

**Mr Hughes**—If you were to use sorghum as a feedstock, for a 200-megalitre type facility, you would need about 440,000 tonnes of grain. As a co-product from the actual process, if you used a dry mill process, you would be producing about 170 million tonnes of what is called dry distillers grain. That would be put back into the feed market.

**Senator HEFFERNAN**—If you decided to attach directly to the plant a facility, say 5,000 cows in a dairy or a feedlot, where you did not have to dry that, because there would be some energy costs in drying—have you blokes done the sums on dry feedstock versus wet?

**Mr Hughes**—It is an awful big feedlot.

**Mr Jones**—The other point is that wet stillage does not have a long shelf life; only 24 hours. You have to produce ethanol for your customers, so you cannot afford to have a distillery go down or you cannot afford to have the cows go down.

**Senator HEFFERNAN**—So the plant would generate the power to do the drying internally?

**Mr Hughes**—No, it would require power. If you look at the inputs, the key determining factors around economics, there is the technology choice that you make because that is going to drive the capital, and then the feedstock cost. The feedstocks are not linked to the crude oil price, so that is another risk that needs to be managed. You then have the risk of the actual co-product and the value you will be able to achieve for that in the market. You also have the risk of any changes in operating costs, but that is a fairly small one in this scheme, and energy costs are a significant risk. The other thing to remember is that a standard facility requires about three litres of water for every litre of ethanol it produces, so you need to have a secure water supply as well.

**Senator HEFFERNAN**—I notice Australia's biggest feedlot has just been given approval at Myrniong down on the border there in Victoria, and they are talking about the possibility of attaching a huge feedlot to it to overcome—obviously, as you say, you have to feed it through pretty quickly if it is wet. But I think part of the viability is that the grain will be determined globally. There will be an import parity price for grain. We have had arguments from the lot feeders who say they do not want this to happen because they do not want the price of grain to go up, but if you are globally efficient, you are going to be tuned into global prices which are going to affect it.

**Senator NASH**—What were the drivers for CSR that prompted you to get into ethanol production in the first place?

**Mr Hughes**—We have been in ethanol since Federation. Our first distillery was actually at Pyrmont.

**Senator HEFFERNAN**—Did they drink it originally?

**Mr Hughes**—Inner Circle rum was the brand and it has always had a strong affiliation, I suppose, with Australian culture.

**Senator NASH**—I should have asked in terms of liquid fuels for vehicles, shouldn't I?

**Mr Hughes**—If you come back to fuels, back in the Second World War—I think also the First World War but mainly the Second World War—we provided a lot of fuel ethanol as part of a government policy program. There was quite a bit that was driven from the Sarina facility which used to be the Alcohol and Power Co., I think it was called back then.

**Mr Jones**—In 1927 that started.

**Mr Hughes**—There was a significant fuel program, that was government driven, around the war years. Many cars ran on 100 per cent ethanol back in those times.

**Senator NASH**—I noted in your submission that you said CSR is working on some technology to develop the increase in yield from sugar cane. I note that it will be a few years before you come to some results, but can you expand on what it is you are actually doing there?

**Mr Hughes**—We are working on a process of genetically modifying the cane, which we call sugar booster. We are going into our first stages of commercialisation, doing field trials to see whether or not we can take it to a commercial outcome. That is showing some promise of being

able to double the fermentable sugars in cane. If it is able to do that, then that has some significant implications for sugar as a feedstock for ethanol, in terms of lowering its cost. But at current world prices for sugar, sugar would still be a better use for the end product than ethanol; just based on where the market is at the moment. Markets do have a tendency to change and those views might change, so this has a significant driver in terms of changing the economics for alcohol production.

**Senator HEFFERNAN**—Would that technology be something that you would patent?

**Mr Hughes**—It is something we have patented.

**Senator HEFFERNAN**—Good, because if Brazil gets hold of it—

**Mr Hughes**—We have worldwide patents for this technology.

**Senator NASH**—What is your view on the potential of the lignocellulose, the other alternative of that woody production? Is that something CSR has looked at as well, or do you have a view on the potential of getting it out of woody weeds or whatever we can?

**Mr Hughes**—It is something we have been watching for a long time and we will continue to watch because at some point in time somebody will generate a process which is economical and commercial to use. At the moment, there is no real process which is offering an acceptable cost of production, because it requires the input of a lot of energy to break those cellulosic bonds. It is a strong process. If somebody can find the magic key and unlock it with an enzyme which is affordable to produce and so forth, then we will be right there behind them.

**Mr Jones**—Shell have a program in Canada and ExxonMobil is contributing to a program in the US. Hundreds of millions of US dollars are going into this research.

**Senator NASH**—How many litres of ethanol did you produce that went into the market in the last financial year?

**Mr Hughes**—I think it was just over 8½ million, which was up from one million the year before, so an eightfold increase.

**Senator NASH**—Where does that go to?

**Mr Hughes**—We supply all of the fuel majors and all of the fuel majors have taken product. The largest user in the last 12 months would be the independent chains.

**Senator NASH**—What are your projections for the next financial year? If it has gone from one million to 8½ million, do you have any projections for the next 12 months?

**Mr Hughes**—I am hoping to do in excess of 22 in this financial period. The majority of that will be split between BP and the independents.

**Senator NASH**—Is that a volume that has been contracted already or is that something that you are hoping to produce and then supply?

**Mr Hughes**—That is a volume which has been contracted. We are currently at the stage of installing a molecular sieve at our facility in North Queensland. It is going to increase our drying capacity up to 32 megalitres, hence we then have more fuel to put into the market and hopefully encourage it to grow. The key risk that I did not talk about earlier, which I should have, is really the market risk of this product. It is about consumers choosing an ethanol fuel at the pump.

**Senator HEFFERNAN**—That is where I want to get back to.

**Mr Hughes**—If people do not vote with their feet and choose that nozzle, then this industry will not develop.

**Senator NASH**—In terms of that market risk, do you think it is a bit chicken and the egg at the moment? How do you measure consumer will to use it when there is not that much available? What is CSR's view on measuring consumer awareness and their will to use it when, as I say, it is chicken and the egg; there is not that much available?

**Mr Hughes**—At the moment there is not a lot available, you are quite right. What we have been doing is working with out customers to promote the product and we have been doing trials, expanding its exposure in different pockets, mainly in Queensland. Queensland certainly is the most pro-ethanol of all the states. I think that has a lot to do with what the Queensland government have done up there. BP have recently switched some of their service stations to 100 per cent ethanol blended ULP and they do not offer a standard ULP product. This is a significant step in really understanding what the impact is going to be on the market. We are watching that very closely with them, obviously, and I am sure that others are.

**CHAIR**—Is that in Queensland?

**Mr Hughes**—That is currently being done in Mackay at three facilities.

**Senator HEFFERNAN**—How do the fuel companies get away with arguing, as they have argued in Australia, 'This will rot your boots,' and in America they promote ethanol in fuel? Why do you think they are playing jiggery-pokery with the market? I do not want to put you out of business, mind you.

**Mr Hughes**—I do not think that the fuel companies are doing that. That has not been our experience. We have been working quite sensibly with them. In fact, most of them are looking at—

**Senator HEFFERNAN**—But they do have signs—or did have—'No ethanol', whereas in the States they have a sign up saying, 'We've got ethanol.'

**Mr Hughes**—Yes.

**Senator HEFFERNAN**—Why do you think that is?

**Mr Hughes**—This goes back to the market scares that happened in early 2000 where, I think, 30 per cent blend got into the fuel product—it might have been 20 per cent—and that did cause problems. That was not properly managed, so we have been recovering from that. There has

been a lot of bad press through the various vehicle associations mainly and, as a result, consumer sentiment has gone south very quickly, so we have been in the process of rebuilding that. A couple of the fuel companies have done some work on this: notably, Shell's position of putting it in their flagship fuel and then using that flagship fuel to back up the super cars for this year's season is really a strong step in saying, 'Hey, this isn't a second-rate fuel. This is one of our best fuels and it's got ethanol in it.' That sends a very strong signal to the market. I think BP are now marketing their product as the 'new unleaded', and that is a very strong message as well.

**Senator MILNE**—To follow on from that point, you say in your submission that engine technology and engine choice will need to be modified if we switch fuel types on a fairly substantial level, and you talk about 'changes to supply chain logistics'. This is particularly relevant at the moment as in the Senate we are looking at the issue of service station roll-out and so on. Do you want to elaborate on that?

**Mr Jones**—There are engine technologies that are available in Brazil and the US which provide flexibility. Cars in Brazil can run on between zero and 100 per cent ethanol. You cannot buy pure gasoline in Brazil; it is a minimum of 20 per cent ethanol. In the US they have a flexibility of between zero and 85 per cent. That is Bosch technology; I do not know who else has it. It costs around $100 to $200 per unit. That is one aspect. Whether ethanol is ever big enough in Australia that you want to go to a 100 per cent market, that would be enormous in terms of logistics and handling and so on. That is what they have done in Brazil and in the US they have gone to 85 per cent in some locations. Also as cars go towards 95 octane, of course, engine technologies are matching the high-quality fuels and Australian technology would have to catch up with that at some stage.

Regarding infrastructure, you are probably better off asking the oil companies about it, but our understanding is that the preference—certainly BP have invested for this and some of our other customers have told us—is to in-line blend the product rather than splash blend, which is what tends to happen now. Most of the US market is splash blended: there is nothing wrong with it but the oil companies, I think, want to have better control over their product, so that is an investment that they have to make in their terminals. There are issues about changing over pumps: they have to clean them and make sure there is no water because ethanol will scavenge water.

Fuel is really about logistics; location of distilleries is about logistics. What you are doing is putting in another product and you have to figure out what the most attractive logistics are. That is another aspect.

**Senator MILNE**—Has the ethanol industry looked at that with the fuel companies to make sure that, if Australia did have better uptake, we would have a roll-out of infrastructure in place to be able to service the community?

**Mr Jones**—The Queensland government has been very good in providing grants to both the independents and the oil companies in relation to that infrastructure. We have had discussions. It might be that we have to co-invest or other deals may be done to make that happen. Once they are committed and the market is moving, then the infrastructure will follow.

**Mr Hughes**—Infrastructure is at two locations basically: it is at the point of delivery to the consumer, where you do need to go through and clean out and upgrade tanks in a lot of areas so

that you can take an ethanol based fuel. The other infrastructure is really at the blending facilities. By far the best blending alternative is in-line blending. It manages most of the environmental issues with the best ease. So it is about creating those facilities at each of the ports.

**Senator MILNE**—When you talk about economic pathways which could inform future directions and choices, is that what you mean? What are you talking about?

**Mr Jones**—We are talking there really about the broader picture of fuels. Ethanol is one piece of the whole picture. What I have heard from the government is a view that, while we might not be self-sufficient in crude oil or in liquid petroleum fuels, we are energy rich as a nation. If you think about the balance of energy, it is positive for Australia. I suppose, though, that we still have to meet our liquid fuel demand and there are other alternatives like gas to liquids, ethanol, biodiesel and so on. The point we were making there was really that it might be worth having a broader study of the options and where the costs lie and the other aspects—environmental, renewability and greenhouse and all those things.

**Senator MILNE**—That brings me to the next question about the whole fuel cycle—the greenhouse gas costs of ethanol. You have not spelt that out particularly in your submission, but you do say that in Europe and the UK they are targeting five per cent ethanol in order to get engaged with greenhouse mitigation. Obviously in the production of ethanol there are some greenhouse gas emissions. Have you done any research to establish exactly what the whole fuel cycle cost of ethanol is in various forms of production in greenhouse?

**Mr Jones**—We have for our Sarina facility, with the molecular sieve, which is a much more energy efficient technology than the technology we employ in our Yarraville facility. We conducted a full life-cycle assessment—it took into account the growing cycle, fertilisers, diesel used by the farmers and in transporting the products—using CSR ethanol from that facility and that chain, which showed that, versus ULP, E10 was greenhouse positive 4.4 per cent per kilometre.

**Senator MILNE**—Would you be prepared to make that life-cycle analysis available to the committee?

**Senator HEFFERNAN**—You can take that on notice.

**Mr Hughes**—Yes, I think we should take that on notice.

**Senator MILNE**—Not necessarily in detail, if it is commercial-in-confidence, because that is a key issue in terms of the questions that Senators Heffernan and Nash were asking earlier in terms of import parity and so on. If a carbon tax is introduced in Australia or an emissions trading scheme, then those issues become relevant because ethanol then becomes extremely cost-competitive, I would have thought.

**Mr Jones**—Yes. Do not for a moment think that the parties have not been considering this in their commercial discussions either.

**Mr Hughes**—It is something of which we are very much aware. In fact, it really is something that we are using to inform our technology choices because you can make technology choices which basically are neutral. So you do actually need to manage this quite carefully when you are looking at the whole life cycle. It is not just a matter of saying, 'I can make ethanol. Therefore, I'm going to be okay.' You need to think about this whole issue in terms of the technology choices you employ.

**Senator MILNE**—You have obviously talked about the issue of the introduction of a carbon tax, or let us just say a price on carbon either through a tax or an emissions trading scheme. At what point does that make ethanol more than cost-competitive?

**Mr Jones**—We probably have not run those numbers. Our renewable energy business has been focused on emissions trading or a carbon tax. We are one of the biggest generators of bioenergy RECs in Australia today and we want to grow that business. That is really where we have been focusing, and there is quite a bit of work going on internally in CSR as to how we deal with that across all our businesses so that will get factored in.

**Senator MILNE**—My final question is: we have been told that Mitsubishi in Adelaide is producing vehicles for the Brazilian market, and therefore presumably having the flexibility that you mentioned. Are you aware if that is the case, and that they are being exported?

**Mr Jones**—I do not know about Mitsubishi, but General Motors-Holden do. In fact, the Prime Minister of Brazil drives an ethanol fuelled Statesman.

**Mr Hughes**—Reportedly, the cost to enable vehicles to be flex-fuelled is something in the order of $US100 to $US150 per vehicle, so it is not a huge cost. If we did have a policy arrangement where we were creating that capability, then within 10, 15, 20 years as people turn over their vehicles—because I think the average age of the fleet is something in that order—there would be enough market to seriously consider whether or not a higher ethanol content fuel would be applicable. It is at least in that time horizon away.

**Senator HEFFERNAN**—But you could standardise it in a car now, given those costings. That is more or less just the cost of a flash set of seat covers.

**Mr Hughes**—I do say 'reportedly' because I have not seen the detailed analysis, but it has certainly been reported as that. I am trying to find that out for myself at the moment, to get that validated.

**Mr Jones**—I have data here on the fuel-flexibility vehicles in Brazil. Something like 80 per cent of new car sales are FFV in Brazil today. It looks like 950,000 units a year.

**Senator MILNE**—So, basically, if we regulated in Australia to make it compulsory that all new vehicles be fitted with this capability, that would in fact substantially increase the capacity for an industry such as ethanol to grow into the future, depending on what happens with carbon costs and so on?

**Mr Jones**—It is one aspect. You have to look at fuel standards and all those sorts of things.

**Mr Hughes**—But it does provide options going into the future.

**Senator MILNE**—That is right.

**Mr Hughes**—Whereas you will always be 15 to 20 years away until you make that sort of decision.

**Senator MILNE**—Thank you.

**Senator STERLE**—Mr Hughes, would I be correct in assuming that you have used molasses for 80 years to produce ethanol?

**Mr Hughes**—That is correct.

**Senator STERLE**—Where does the molasses come from?

**Mr Hughes**—It is a by-product from our sugar mills.

**Senator STERLE**—So all Australian?

**Mr Hughes**—It is all Australian, yes.

**Senator STERLE**—I notice that you say it is too expensive to transport. How is it transported?

**Mr Hughes**—Too expensive to transport. Sorry?

**Senator STERLE**—Yes. You were saying it is too expensive—or you cannot cost recover—to use molasses because it is expensive to transport. So how do you transport the molasses?

**Mr Jones**—Perhaps I could answer that, Senator Sterle. When we ferment molasses it contains about 50 per cent sugar. Typically the sugar content in molasses has also been half the value in sugar, so it has been a very attractive feedstock. It is quite dense and in terms of the amount of sugar and you are bringing a lot of other material with it. For a distillery you need basically four tonnes of molasses per tonne of ethanol.

People have looked at the molasses market and said, 'Well, Australia exports 250,000 tonnes a year in molasses so that is enough to build another distillery.' But you have to look at where that is exported from, which is all the way along the east coast. So to get that into the one location you would have to transport it there. You can do that by rail or you can do it by road. By the time you put road freight in, it is just not economic. Setting fuel aside, even into the domestic market—pharmaceuticals and that area—you just cannot afford to move the stuff very far before you are not making any money. We have exactly that problem right now with Queensland Rail trying to push up their freight rates. We moved from Burdekin down to Mackay. So for every dollar a tonne they push up freight rates, that is $4 onto ethanol.

**Senator STERLE**—Do you ship it?

**Mr Jones**—Not to ferment, no.

**Senator STERLE**—Where does all our molasses go when it is shipped? To the US market?

**Mr Hughes**—No, most of it goes into the Asian market. We have two major customers. One is Korea and the other is in Taiwan.

**Senator STERLE**—So ethanol is produced offshore in other countries?

**Mr Jones**—No, it would be used for food manufacture.

**Mr Hughes**—The single largest use is for MSG manufacture.

**Mr Jones**—Some of it goes into cattle feed.

**Senator STERLE**—Yes. Thank you.

**Senator HEFFERNAN**—I can vouch for the weight of it because it used to come down to the farm in 44s and they were pretty heavy.

**Mr Jones**—You would have an OH&S problem with those today.

**Senator MILNE**—One thing we have just discussed in terms of a policy option is regulating for mandatory installation of the flexi capacity in new vehicles, but you say in your submission that if it is in the public interest to develop alternative fuels then there might be a need for policy intervention, recognising that you have also said propping up an industry against imported competition is not going to work in the long term and in fact may create an investment bubble and so on. If we were to take the view that it is in the public interest to have alternative fuels, given oil depletion, given greenhouse gas emissions, given policy settings coming down the line around those, what sorts of policy interventions do you think would be the most appropriate?

**Mr Jones**—I guess there has been a lot of debate over this in the last three or four years.

**Senator MILNE**—That is why I am interested in knowing what you think.

**Mr Jones**—Yes. You write these things at a particular point in time, and your sentiment changes as things go forward. At the moment we are not particularly proposing any policy intervention. We certainly want support from governments. It will not happen without government support. Queensland is the leader in that, and also the federal government. I talk to public servants in Canberra all the time. They are telling me how they are using E10 and so on, and that is the sort of thing that starts to build confidence. The ethanol roundtables are useful in terms of moving things forward.

If we found that these large-scale plants were too expensive in Australia and that it was not viable, that is the point at which you would have to reconsider some kind of policy intervention, whether that is through excise or whether that is through renewable energy—an MRET type of scheme—or something. There are a number of different policy ideas out there that have been canvassed over the last three or four years. If you gave it your best shot—world-scale plants with

the raw materials we had, with the best logistics we had and with the best locations we could get—and it still did not fly, and yet we thought it was in the public interest to do so, then we would have to consider some of those options.

**Mr Hughes**—I still think that this industry can be internationally competitive in its own right and, hence, I do not think any direct policy is necessary at this point in time in terms of getting the industry going. I think the issues are more around what view Australia holds in relation to energy security and whether or not it sees that as an important thing to chase. If it does, then it needs to make decisions based on that rather than vested interests from an ethanol point of view or from a biodiesel point of view or from whatever other faction that you wanted to put forward. I think that is where the debate should shift.

**Senator MILNE**—I want to follow up on this issue of energy security because Australia has natural gas, which is obviously a transitional transport fuel. How do you see the competition between ethanol and natural gas as fuels to the future?

**Mr Hughes**—I think both of those are going to have a part to play. The production facility is most likely going to be a user of natural gas, as a clean source of energy at a reasonable price. In terms of the logistics of moving natural gas versus ethanol, I think they are both going to have an important part to play in the future.

**CHAIR**—I want to go back to the lignocellulose issue. You were saying that you think it is about 10 or 15 years down the track.

**Mr Hughes**—From a commercialisation point of view. There are some recent breakthroughs.

**CHAIR**—Yes, I was going to ask you about those.

**Mr Hughes**—It is a little bit like our technology around the sugar booster: it shows a lot of promise and if everything goes according to Hoyle, fantastic! But generally, as you start to put them to scale—the sort of scale that you require for commercial manufacture—that is when you find that you have issues. It is making sure that we can solve those sorts of things, so I have learnt not to count chickens.

**CHAIR**—I have a couple of questions arising from that. When you talk about some of the breakthroughs, are you talking about the research that is coming out of Western Australia?

**Mr Jones**—No, we are talking about the enzyme research in the US.

**CHAIR**—Because there is some very recent research coming out of the CRC for salinity in Western Australia. Are you aware of that?

**Mr Hughes**—I heard about that last week, but I am not a full bottle on it.

**CHAIR**—Go to submission 179 on our website.

**Mr Hughes**—Okay.

**CHAIR**—Secondly, my understanding of lignocellulose, if we can make it work, is that it is better for the energy content. Is that your understanding?

**Mr Hughes**—No, I do not think that is correct.

**Mr Jones**—It may be a more energy efficient process. Ethanol is ethanol.

**Mr Hughes**—In terms of looking at the LCA of lignocellulose next to a grain plant, yes, it might be. If you look at the total energy that is used, that might be true, but not in terms of an end product.

**CHAIR**—Okay.

**Senator HEFFERNAN**—Would it be possible to get rid of the wine glut by converting it over to ethanol?

**Mr Jones**—The Victorian government asked us the same question. You need to make ethanol year-round, and you only get grapes seasonally.

**Senator HEFFERNAN**—So you could not do it as a one-off or two-off thing?

**Mr Jones**—No. They make some ethanol in wineries that could be put into fuel with further processing, but you cannot justify investment for a four-week operation a year.

**Mr Hughes**—The economics around these things are 365 days a year.

**Senator HEFFERNAN**—We'll just have to focus on drinking it!

**Mr Hughes**—Yes.

**CHAIR**—If there are no other questions, thank you very much. I think Senator Milne asked for some additional information. If you can see what you can provide to us, that would be appreciated.

[10.16 am]

**FINGLAND, Mrs Sharon Ruth, Assistant Director, Western Sydney Regional Organisation of Councils Ltd**

**GOODING, Mr Alexander Steven, Executive Director, Western Sydney Regional Organisation of Councils Ltd**

**HAY, Councillor Anthony John, President, Western Sydney Regional Organisation of Councils Ltd**

**CHAIR**—I welcome the Western Sydney Regional Organisation of Councils. I am going to assume that you know the terms of reference of the committee, so I will not reread those. Our reporting back has been extended to 19 October. These are public proceedings, although the committee may agree to requests to have evidence heard in camera or may determine that certain evidence should be heard in camera. I remind witnesses that, in giving evidence to the committee, they are protected by parliamentary privilege. It is unlawful for anyone to threaten or disadvantage a witness on account of evidence given to a committee, and such action may be treated as a contempt by the Senate. It is also a contempt to give false or misleading evidence to a committee.

If you object to answering a question, we will ask you to state the reason why, and then the committee will determine if we would like you to answer. You may ask us to do that in camera. I invite you to make an opening statement and then we will get into questions.

**Councillor Hay**—WSROC is the representative body, formed in 1973, of Australia's oldest and most respected local government lobbying organisation. It is a key advocate for Western Sydney and consists of the 11 member councils of Auburn, Bankstown, Baulkham Hills, Blacktown, Blue Mountains, Fairfield, Hawkesbury, Holroyd, Liverpool, Parramatta and Penrith. Greater Western Sydney, comprising WSROC and MACROC—the Macarthur Regional Organisation of Councils—contains 14 local government areas, accounting for over 42 per cent of the Sydney metropolitan population, and a large area of the metropolitan fringe. It is one of Australia's most important urban regions. It is also home to Australia's third largest economy and is part of the global city of Sydney. The population is about 1.8 million, or one in 11 Australians.

It is proposed by the Department of Planning, New South Wales, that Greater Western Sydney will accommodate over half of the population growth in New South Wales over the next 20 years—approximately 600,000 people. This compares to regions such as the Hunter and the Illawarra, which will grow by an additional 100,000 people over this time. In relation to issues that I feel are of importance to Western Sydney, it is an engagement by the federal government with regard to the application of fuel excise collected. It is one of the larger areas that has a pool of vehicles, private ownership and lack of public transport. At 38.15 cents per litre or, for every 100 litres $38.15, for every person using a vehicle—private vehicle use—we think that some of that could be put back into public transport issues in Western Sydney in particular. I also have an

interest in biodiesel and some of the catalytic research that has been done with regard to nanocatalysts. That is a separate issue to the Western Sydney submission.

**Ms Fingland**—I would like to give you a brief overview of what our submission contained. We drew upon a number of research projects highlighting the issues associated with the growing mobility and decreasing accessibility of Greater Western Sydney and considered the distributional effects that rising fuel costs will have on the region. These research projects have shown how liveability is being endangered by threats to environmental quality, social wellbeing and economic viability. We discuss the population growth proposed over the next 20 years and highlight existing areas of socioeconomic disadvantage. We look at the way federal and state government transport policies are resulting in often unintended consequences from a regional perspective.

Successive state and federal governments have failed to adequately address the public transport needs of our region, yet at this time no other area of investment has the same potential to benefit so many different aspects of urban living as public transport. Finally, our submission examines policy options and proposes recommendations to minimise energy consumption and the adverse environmental, economic, social and health impacts of motorised travel and the need to reduce the reliance on the motor car.

Our region is not homogenous. Many of the middle ring suburbs are now the locations of some of the most disadvantaged communities in Australia. Parts of the region are also experiencing continued growth pressures, while still dealing with backlogs and continued underinvestment in infrastructure provision, particularly in relation to public transport. Many commentators have been noting the strong and rapid rise in the international price of oil, but currently there are no indications that there will be a corresponding decline in fuel prices in the short term.

In the last 30 years the total number of Australian cars has grown three times faster than the population, and in the last decade in Sydney the average VKT per vehicle has grown more than twice as fast as the population. Commentators have been highlighting the potential adverse scenarios that the growing gap between peak oil demand and supply will have on cities that are dependent on roads and private vehicles for urban mobility. They argue that the impacts will be much greater than simply increased fuel cost and could extend into every aspect of urban, economic and social life.

Community consultations for many years have pointed to poor accessibility and transport difficulties being experienced by our residents. There is a need to increase the accessibility to facilities, opportunities and services located both within and outside the region's boundaries. Upgrading of infrastructure is urgently required for commercial, private and public transport at an equitable cost to the established community and to ensure the adequate provision of services for new development.

Urban release has been taking place on a massive scale in Western Sydney on land that was cheap due to poor accessibility and a lack of services and facilities. Low-income families moving into the area had no choice but to rely on the car. The need for a second or third car is now firmly entrenched in the minds of the population, with the result that high levels of car

ownership are now exacerbating income deprivation in many areas. To bring about any change will require a massive alteration to a lifestyle that has developed out of necessity.

In summary Australian cities, in particular the fringes of the cities, are highly car and oil dependent. Western Sydney has always suffered from poor access to public transport which has had a long history of operational patronage problems. Sydney's public transport is split between state rail, Sydney Transit which operates buses in the central and eastern suburbs, and a number of loosely coordinated private operators throughout the western region. The rail network in Western Sydney has not been significantly expanded since the 1930s when the region's population was less than a fifth of what it is today. The result is that urban expansion is pushing residential growth further and further away from the existing rail network, increasing dependence on private cars and buses. Western Sydney's economy and the welfare of the community stand to lose if new approaches to deal with Sydney's transport problems are not adopted.

I would like to bring your attention to a recent research paper prepared by Griffith University, which I think they have submitted to this inquiry, where they assess the resilience or vulnerability of urban communities to increased fuel prices, and have noted how the high socioeconomic impacts will spread across different localities. This research highlighted that localities situated in the middle and outer suburbs of Western Sydney are the most vulnerable to the socioeconomic impact of oil price rises. The authors call for new policies, emphasising the need for public transport, to address the impacts.

Western Sydney is often considered to be an area of affordable housing compared to the rest of Sydney. However, this does not mean that housing is necessarily cheap for the people who live there. Hidden inequalities stemming from differences in the physical and social infrastructure provided affect affordability. Poor public transport provision, limited employment opportunities and scarce community services and facilities are all factors that erode even further the real affordability of housing in the older suburbs. There is increasing evidence of community stress which comprises transport stress due to commuting times, costs and lack of public transport options, coupled with housing stress, and the risk of greater socioeconomic polarisation is increasing.

Transport costs have now been found to be the third largest item in household budgets after housing and food, consuming on average 14.8 per cent of the proportion of household income. In Western Sydney the high levels of car ownership necessitated by poor public transport, combined with the dispersion of employment opportunities and facilities and services, could well contribute further to transport stress. Western Sydney is also an area of high unemployment.

Mobility is especially critical to the wellbeing of an older population. Affordable, adequate transport options are essential for accessing community services, especially medical services, shopping and maintaining social linkages, but in parts of Western Sydney the current urban form and service provision is ensuring that the ageing population are completely car dependent and will be left stranded when they can no longer drive.

In conclusion, we believe that a number of these research projects have demonstrated that the socioeconomic impacts of higher fuel prices are likely to be distributed unevenly across Australian cities, and it will be the most socially disadvantaged outer suburban locations where

residents will be the most vulnerable. It is essential that this uneven distribution of impacts is acknowledged as being a critical consideration of the future social and economic sustainability of our cities.

The increasing high cost of fuel points to the need to change the pattern and mix of existing lifestyles, not just because of the adverse environmental and economic impacts of an overreliance on fossil fuels but also because of the poverty and poor quality of life experienced by some individuals unavoidably trapped by this overreliance. Policies should be adopted by all levels of government to ensure that new development is located in areas that are accessible by walking, cycling and public transport, thereby reducing reliance on the private car.

In summary, we are calling on both federal and state governments to provide substantially increased funding for public transport infrastructure and to reassess policies which encourage private vehicle use and discourage public transport use, in order to reduce demand for transport fuels.

**Senator HEFFERNAN**—Very good. You ought to go over to the Blue Mountains; it is 10 times that.

**Senator STERLE**—I would like to ask a question about public transport. I understand that you have said that it is in poor condition in the western suburbs. What would improve it?

**Mr Gooding**—There are a range of things which need to occur. You have to bear in mind that, as Sharon said, the rail network in Western Sydney has not been expanded since the 1930s. This has been due to a lack of investment by state and federal governments over that period. The current state government does have plans in place but they will take a long time to roll out. We need to extend the rail network in Western Sydney. We also need to provide intraregional bus services and corridors, some of which are happening. There are also a range of initiatives from the federal perspective—for example, looking at the treatment of public transport fares, we note that the state transport ministers and the federal transport minister in a recent meeting discussed the possibility of tax deductibility of public transport fares. These sorts of initiatives would help to reduce the growth in private vehicle use. They will not necessarily stop it but they will help to slow it down.

We also need to look at how we locate facilities and services and employment. One of the concerns that we have in Western Sydney is, as the population will grow by about 500,000 to 600,000 over the next 25 to 30 years, ensuring that employment growth at least keeps pace with that. It has taken a lot of work to get the level of employment containment that we have in Western Sydney at the moment, which is that about 70 per cent of the workforce, roughly speaking, is employed within greater Western Sydney. That means 30 per cent have to leave the region to access work. If we do not at least maintain that and ensure that we get employment in Western Sydney, ideally located in major centres and subcentres, what we will have is an explosion in private vehicle use of people leaving the region and basically overrunning the motorway system that has just been constructed.

**Senator STERLE**—Mr Gooding, a concern is the poor quality or the provision of public transport, but you also mention fares. I am confused. Even if there were a very efficient public transport system available for the people of the western suburbs of Sydney, would you say that

they probably still would have great dependence on private vehicles if the fares were not subsidised or reduced?

**Mr Gooding**—Improving the infrastructure would certainly have a major impact on public transport use but one of the problems we have is that there is a lot of attraction for people to take salary packages which involve employer provided vehicles and to drive them over 25,000 kilometres a year, because that is the way the system works. I know of people whose companies, whose employers, require them to pay the FBT as part of their contribution. They will do things like take their cars and drive them up and down the coast and back just to make up the 25,000 kilometres at the end of the 12-month period. That is the sort of irrational behaviour we have at the moment.

If that aspect was at least made equitable—I am not saying that it should favour public transport, but if it were at least made equitable—then we would have a level playing field from which people could start. That would also help, in terms of the long lead times it inevitably takes to provide public transport, in discouraging people from getting their second or third or even fourth vehicle.

**Senator STERLE**—Just help me out, because I have been to Penrith but I have no idea how far away it is. How long does it take to get from the western suburbs to the city centre, assuming everyone comes to the city centre.

**Mr Gooding**—They do not. They go to significant employment centres within the region, which is the sort of thing we want to build up. But if they are coming from Penrith to the city, it is about an hour by train. It can be a bit less, it can be a bit more, depending on the sort of train they take. I was in Japan recently and I travelled from Osaka to Kyoto, which is roughly the same distance, and I had time to eat an apple on the train.

**Senator STERLE**—I take it that you are not a slow eater

**Mr Gooding**—No. By car it varies, depending on the time of day and the level of traffic.

**Senator STERLE**—But is the time comparable by train and by road?

**Mr Gooding**—Increasingly what happens is that when new motorways are constructed, there is initially a period in which it is faster to travel by car and that induces people to buy a car or to take up travelling by car. Then what usually happens is that, after a few years, the motorway becomes more and more congested during peak hour and the travel times then start to slip back. At the initial phase, a few years ago when they opened the M5, the patronage on the parallel railway line dropped by about 10 per cent almost overnight because initially it was faster to travel on the motorway. Speed of public transport is often a neglected factor.

**Senator HEFFERNAN**—Who should pay the real cost of public transport if you are saying it is an issue?

**Mr Gooding**—If we look at the externalities of both public and private transport and look at how they are charged, everybody has a responsibility to pay for public transport.

**Senator HEFFERNAN**—So the answer is the taxpayer?

**Mr Gooding**—I think the user has to make a contribution.

**Senator HEFFERNAN**—But the real cost?

**Mr Gooding**—The taxpayer also has to make a contribution, just as the taxpayer makes a contribution to roads.

**Senator STERLE**—You will have to forgive Senator Heffernan. He has not had the chance to exercise his authority in estimates for the last 10 years, so you are on the firing line.

**Councillor Hay**—In regard to user pays, I think there could be a contribution from fuel—

**Senator HEFFERNAN**—Why I asked is that it sounded as if you encoded a message in there: we should subsidise the fares so people get on public transport.

**Mr Gooding**—No. What I am saying about the fares is that we treat public transport in the same way that we treat the provision of vehicles for private use by employees.

**Councillor Hay**—So it could be tax deductible.

**Senator HEFFERNAN**—Fair enough, but you do not think we should have a tax on cars coming into the city?

**Councillor Hay**—In fact, we already have that, I feel, in regard to the congestion tax. More petrol is consumed in regard to the congestion that already exists.

**Senator HEFFERNAN**—That is a dodgy way out of that. Well done.

**Mr Gooding**—We also have a more direct one, de facto, at the moment because most of the motorways into the CBD of Sydney are tolled. I think that there is over time a case for having a more consistent approach to tolling around the motorway network. The issue of taxes on the CBD is one that we as an organisation have not looked at, partly because the CBD is not within our region. We need to look at this as a total package. Let us try and even up the playing field.

**Senator HEFFERNAN**—I agree with your point that when people buy a house in the western suburbs they do not think it is cheap; I do not think they are cheap. I think everything in bloody Sydney is too dear. You can come to Junee and buy one for $35,000. But when you buy the house for $35,000 in Junee there are certain realities. If you have a heart attack, you have a bigger chance of dying, all those sorts of things, and jobs are harder—do you think there is not enough figured into the price of a house in Western Sydney which takes account of all these things? You are where you are. If you buy a place in Bourke, there are certain drawbacks.

**Mr Gooding**—Sure, but a couple of things about that issue in Western Sydney: firstly, people often talk about all these people moving into Western Sydney, or 1,000 people moving to Sydney a week. Two-thirds of those people have been born in Sydney. A lot of the population growth in Western Sydney is actually home-grown, so those people are buying into the neighbourhoods

where they live. The other thing is that we are noting greater economic and social disparities within the region. At the moment we have a situation where some of those houses happen to be located near the public transport and they get a better deal. Others are not. It is not an easy thing for people to factor in. It is difficult to make that sort of assessment about the value of a house relative to its proximity to a public transport corridor.

**Senator HEFFERNAN**—It would be fair to say, though, that government policy can influence the price of a house. Can I just give you an instance. The houses round the harbour here: 15 years ago, $1 million would buy you any of them and $15 million might buy you one now. The real reason that has happened is that the principal place of residence is a tax-free haven. I will not go there because everybody will have a heart attack around Sydney Harbour, but you can have ways of influencing how people—

**Mr Gooding**—The state government is doing that at the moment in terms of the policies it has about where people live, close to railways lines and so on and building public transport into new release areas. One of the things that tends to happen in Sydney is that, as those new areas are developed on the urban fringe, they tend, for the reasons we have been talking about, to be fairly upmarket. They are usually being bought by second- or third-home buyers. What that tends to lead to is a polarisation within Western Sydney as those people who can afford those houses move out there and the people who cannot stay in the older suburbs, which often do not get the level of facilities provision and so on that the newer areas do because of developer contributions and the like. So you get that pattern of poorer people staying in these older suburbs which are often poorly endowed with public transport and other services and wealthier people moving into the—

**Senator HEFFERNAN**—Into the McMansion belt.

**Mr Gooding**—Yes.

**Councillor Hay**—In the outer Sydney metropolitan fringe, the area of Baulkham Hills or around the federal seat of Mitchell has the highest car per household ownership in New South Wales and I think it is reflective of the fact that there has been no public transport infrastructure out there. There has been a need as that area has grown and we have the McMansions alongside that area as your colleague in the other place would tell you. Mr Cadman would let you know that the McMansions are a problem. They are growing into a problem area for transport.

**Senator HEFFERNAN**—I have to say, I would prefer to raise my family out there than in the 17th floor of a high-rise in here where the only thing you can do with your kids is get them to run down the street. There are some advantages out there. I think it is a great place to bring up a family.

**Councillor Hay**—There are advantages, and even further out, places like Griffith, Leeton and around there, there are—

**Senator HEFFERNAN**—Come to Junee, mate.

**CHAIR**—Senator Sterle, had you finished?

**Senator STERLE**—I cannot remember. What I am trying to allude to is a problem in my state, WA. We can have the best public transport system but we have a mindset in Australia that we will jump in our car and we will do single trips and we do it and it may take longer and it may cost more. When we think about planning for use of public transport, there is a whole chain: security, parking issues, linking buses to trains, safety for our kids, students and the elderly. I do not have the answer, by the way.

**Mr Gooding**—To conclude, we would strongly agree with that. We need a whole-of-government, multigovernment approach to change that mindset. Obviously the increase in fuel prices itself will have an impact. It is already having an impact on public transport patronage in parts of Sydney where people can access public transport. There has been growth, for example, particularly in the use of buses in Sydney. In Perth the construction of the new rail line to the north and to the south has demonstrated—it is interesting to look at the figures for Perth and Adelaide which again, over the period of that expansion of the rail network in Perth compared to Adelaide, go back to 1990. They had about the same level of public transport use, which is extremely low. With the construction of those new rail lines which Perth did and which Adelaide did not, as I recall, the figures in Perth have quadrupled in terms of public transport use over that time, due solely to the construction of the new rail lines and the reconstruction of the existing rail lines in Perth. That shows that you need both the provision of the infrastructure and policies which can change people's mindset.

**Senator STERLE**—And the financial carrot to get people to want to use it.

**Mr Gooding**—Exactly, yes.

**Senator MILNE**—Thank you for your submission. It basically highlights the huge problem that we have with city planning right around Australia. One thing I am concerned about: you said that at the COAG meeting they are talking about tax deductibility of fares, presumably instead of a fringe benefits tax for using your car. The problem we have seen, with higher oil prices, is people moving onto public transport but public transport is unable to absorb effectively the shift. So at one level I am supportive of the notion of changing salary packages to include tax deductibility of public transport, but it is not much good if the public transport is not fast, efficient, reliable and there so that the shift occurs. It is a bit of a chicken and egg. You say in all your recommendations that the state and federal governments need to get together and do this, that and everything else. I could not agree more. Do you think that, instead of dealing with this in an ad hoc way—so we do fares one COAG meeting and roads or something the next—that we need to basically recognise that congestion in cities is a major constraint to liveability and growth and therefore we need a whole COAG series that deals with how to shift cities? I cannot see any way out of the problem of which you do first because you have to have the public transport in place before you can shift the community holus-bolus onto it, otherwise people are going to be frustrated and go back to their cars because the train is late, the bus does not come or whatever.

**Mr Gooding**—We would certainly agree with the need for an integrated approach which looks at all aspects of that and which involves state, federal and local government. You could approach this in several ways. One is to perhaps look at some sort of staged implementation of those recommendations. In New South Wales, the government is also investing in the secularisation of the rail network which will free up capacity and improve the ability of the rail

network to deal with increased patronage. I agree with you that we need to take a broader look at the issue of congestion and the management of transport in our cities. I think this is a national issue because it is starting to impact on the economic efficiency of cities, particularly Sydney. It is just so difficult to get around Sydney and that has to have an impact on its economic role as Australia's major global city.

**Senator HEFFERNAN**—As things stand, would you give up your car package for a fare package?

**Mr Gooding**—Speaking personally, I used public transport for many years and only about 18 months ago—I live in the Blue Mountains and our office is in Blacktown. Despite the fact that it is 60 kilometres from my home to my office, I had used public transport up until that point, but because of the difficulties with the rail network it just got too difficult. I also have a number of night meetings. If the rail system in Sydney became more reliable, and it looks like it is, and if there was an incentive to put public transport on an equal playing field, I would certainly switch back to using public transport.

**Senator HEFFERNAN**—What about you?

**Ms Fingland**—I have the misfortune of living in the north-west sector which is totally—

**Senator HEFFERNAN**—You are reliant on a car anyhow.

**Ms Fingland**—Absolutely. One of the things that is not generally appreciated in terms of where employment has been locating is that in the last 20 years in Western Sydney only 18 per cent of all new jobs have been located in centres. They have all been suburbanised. That is a major issue when it comes to public transport provision. Another point I would like to make is that, having been involved in quite a lot of issues associated with public transport, I am absolutely convinced that, unless governments plan public transport from the point of view of the user and not just the provider, that is a major impediment to getting effective public transport that suits people.

**Senator HEFFERNAN**—This is a very complex thing, Councillor, because you talk about Mr Cadman and you have Mr Turnbull out here who has given up driving his car because he can never get the bloody thing parked.

**Councillor Hay**—There are all those issues and it depends on how far away you are from a hub of public transport or an interchange of public transport as to the demand.

**Senator HEFFERNAN**—Senator Milne's point is good: do you put the car first or the horse first or do you do both?

**Councillor Hay**—I think Senator Milne's point is quite correct in that you must provide it when you are planning those suburbs. It is a planning issue as much as anything else and for too long that planning of infrastructure has been neglected and has not occurred at the same time that development has occurred in those areas where there has been urban sprawl. We are now trying to contain that.

**Senator HEFFERNAN**—Should that be built into the price of a block of land?

**Mr Gooding**—It is starting, to some extent. There are levies in New South Wales, particularly in the growth centres, which are going towards the provision of transport.

**Senator HEFFERNAN**—But that is not a political reality, is it? Given that the government has just dogged it on—what have they just dogged it on now? They have walked away from the levy on something.

**Mr Gooding**—They have reduced the levy in some of the growth centres because—

**Senator HEFFERNAN**—It has been in the paper the last couple of days that they have walked away—

**Councillor Hay**—The Snowy Mountains?

**Mr Gooding**—No. I think you are referring to the basic requirement for flats, the environmental—

**Senator HEFFERNAN**—There was an energy rating.

**Mr Gooding**—Yes, that is it. That is what I am talking about, yes.

**Senator HEFFERNAN**—Politically, it is nice to say one thing; but achieving it politically—

**Mr Gooding**—There is a widespread debate, and there is no simple answer—that is, when you are looking at regional level facilities which in the past have been paid for by the taxpayer—as to how much of that should be passed on to the individual developer and the individual person buying the property. In the case of Sydney you might argue that the tax has not been provided by anybody in parts of Western Sydney for many years, but there is a philosophical issue about the relative proportion of that. I cannot remember the exact proportion, but the percentage that the New South Wales government have allocated—that is a fairly arbitrary decision and it is hard to know what the relative balance should be. It is a philosophical question. There is an argument that new release areas should make some contribution at a regional level, but it is probably unfair to expect those areas to contribute all of the cost of the infrastructure.

**Senator HEFFERNAN**—As with the argument, which is going to be a bigger argument, about refurbishing Sydney's sewerage and a secondary water market, you would not expect those people who have just put in the new sewerage lines—

**Mr Gooding**—To pay the lot, yes, exactly.

**Councillor Hay**—By the same token, you would not expect people in the country to have to pay for all of their roads and bridges out there. That is a major burden in the country areas. I understand why fuel excise is collected and it is the redistribution of that, and if some of that can go towards what is needed in the country—because as a community we drive on those country roads as well and look at the—

**Senator HEFFERNAN**—When you buy a place in the bush though, Councillor—I have a place at Booligal and I never expect to have, and I will not ever—it took me 18 years to get a telephone and power but you sort of have an expectation of the reality of where you are going so there is a bit of that in it. We do not expect a lot of the things; the funds are not there. We would have to tax everyone 200 per cent of their income to fund it.

**Councillor Hay**—We understand that the city contribution of excise needs to be distributed, but there certainly needs to be a fresh look at the way the contribution of that excise is used in an alternative way for public transport initiatives.

**Senator HEFFERNAN**—You could argue that the price of a bottle of water should be cheaper than the price of a bottle of milk, but it is not. It is a lot more trouble to milk a cow than to turn a tap on.

**Senator MILNE**—Can I return to the conundrum about the provision of transport and then getting people on transport and the issues you have highlighted in your submission about Western Sydney. One of the things this committee is concerned about is the socioeconomic ramifications of the failure to have provided public transport hand in hand with the increasing price of oil, which means that housing affordability has now joined with energy affordability, both in terms of electricity and fuel, for people living in those outer suburbs. Given that we are seeing higher oil prices, are you now, as a combined council, making an assumption that oil prices are going to continue to rise and are you reprioritising issues like the provision of walkways, cycleways, public transport, internodal and those sorts of thing? Is that now becoming a greater priority for you, on that assumption? What assumptions are you making about the need to reprioritise these issues in the light of the current oil price?

**Ms Fingland**—In our submission we cited the example of Fairfield Council, which represents one of the poorer communities in Western Sydney. A number of years ago they produced what is called an accessible city strategy, which was quite an innovative way of looking at transport planning from a different perspective rather than just in terms of building roads. They highlighted in that example the need to put greater emphasis on building footpaths, particularly to hospitals and schools, and dealing with areas where you have an ageing population and all those sorts of issues. Councils are starting to respond to this issue because of the concerns. They are particularly concerned that the impact of the ageing population is going to leave people with very little social contact.

**Senator HEFFERNAN**—Do you think that councils are doing the work that the state government should be doing in that regard?

**Ms Fingland**—Councils would certainly argue that they are, yes.

**Senator HEFFERNAN**—Being an old burnt-out mayor, I think they are too.

**Mr Gooding**—In Western Sydney we developed a regional planning framework, partly because at that stage the state government metro planning process seemed to have stalled. Subsequently the state government has reactivated that process. But our regional planning framework, called Future West, provided a lot of input to the metro strategy, particularly around issues to do with transport infrastructure and these issues about the increasing disparity in

Western Sydney. We are hopeful that the infrastructure projects that were identified will be implemented and we are hopeful that they will gain bipartisan support at the state level and at the federal level as well.

**Senator HEFFERNAN**—Where do you think all the thinkers are in government on this? Where are all the people that are applying their minds to how you deal with all the things you have to deal with? Where are they? Is there a task force tucked away somewhere that works on nothing else?

**Mr Gooding**—We understand that there are people within the Department of Planning looking at these issues. Whether they are responding quickly enough to those issues is another matter. We have always argued, even prior to the current fuel crisis, that we did not oppose the development of a motorway network, and we specifically saw the M7 as being an essential corridor. We have always argued that those corridors should be accompanied by public transport corridors to provide public transport access, be it a busway as we have on the M2 or the rail line that you have in the northern suburbs of Perth, so that there is an alternative public transport access.

**Councillor Hay**—I think Professor Peter Newman did some wonderful work when he was commissioner for sustainability here in New South Wales. It is a pity that he is no longer in that position, but his work still exists and it is very good reference material. Some of his presentations, such as, 'If you build it, they will use it,' are significant. His success in Western Australia with the rail system that was put in over there speaks for itself.

**Senator HEFFERNAN**—That fits in with Senator Milne's—

**Councillor Hay**—It does. There is that talent available.

**CHAIR**—We will hear from Peter Newman when we are in Perth.

**Senator MILNE**—In terms of Western Sydney and public transport, you indicated a little while ago that there are plans afoot to upgrade the rail network but that they are some way down the track. In an ideal world—let us assume the Commonwealth and the states got together and had a summit on the cities—what would be the three highest priorities that, if we implemented them right now, would make the biggest difference to getting rid of the congestion and improving affordability and movement in Western Sydney? What would be the three things you would bring forward immediately to implement?

**Mr Gooding**—I will cheat and have four. The first would be about whether the Commonwealth could inject funds for, or support in some way, the speeding up—I hesitate to use the term 'fast-tracking'—of the construction of a north-west, south-west rail link, which we think is a major investment in Sydney's future; the second would be to address fares and to look at the pricing structure of public versus private transport to make sure it is more equitable; the third would be to inject more funds into the development of the bus corridor network within Western Sydney; and the fourth would be a much better integration of the location of employment and services with transport, looking—as Sharon said—at how the user interacts with the public transport system. They would be the four key points.

**Senator MILNE**—In the absence of intervention to accelerate those, say with a major Commonwealth-state agreement, how far away are those initiatives for you now?

**Mr Gooding**—The north-west, south-west rail line, assuming it survives several changes of government and everything else, is 2017 to 2020. The bus corridors will probably happen a bit sooner than that. The other planning is going on but it is a fairly slow and, I would say, very underresourced process.

**Senator MILNE**—Unless there is some action, we are looking at a decade away, during which time higher oil prices will exacerbate an affordability crisis for a lot of people living in Western Sydney, not to mention air quality, congestion and restricting economic growth.

**Mr Gooding**—Yes, that is correct.

**Councillor Hay**—That is a fair comment, Senator. Something that could be done concurrently with that is to support, maybe at a 200 per cent tax deductibility, the urgent need to look at the research and development of catalytic conversion of long-chain hydrocarbons as an alternative fuel for biodiesel, using plastic recyclables to turn those into biodiesel. There is technology currently working in Europe that is doing that with soft drink bottles. That is available, and we need to engage our brightest thinkers in CSIRO and elsewhere to integrate with industry to come up with an alternative fuel option in support of others such as ethanol.

**Senator NASH**—You mentioned in your submission work trips and the percentage made by car in some of the outlying areas like Camden. Over the last 15 years, when you look at the population pressure in the city and that shift even further west, within the basin area there, and you look at the development that has happened in, say, areas like Camden and Narellan and the explosion of residential areas, whose responsibility is it, or was it, to have looked at the transport needs of those areas, as an example, before all that building went ahead?

**Mr Gooding**—Ultimately, the state government has overall responsibility for determining what areas are developed at that scale around Sydney. Sydney has had a succession of metropolitan plans, some of which have been more significant than others. A lot of the areas that were identified for expansion were identified in the Sydney Region Outline Plan back in the sixties. There were certain sets of assumptions about infrastructure in that plan which were not implemented, and that has been an issue in Sydney. There have been successive metropolitan plans, going right back to the early 1950s or the late 1940s, where infrastructure has been incorporated in the plan and the plan has gone ahead, the housing has been developed and the roads have been put in, to some extent, but the public transport has not been put in at all.

When the rail network was built in Sydney back in the early part of last century it was effectively designed to cater for a city of up to about 2½ million, which it did. It served the city well right up until the 1950s, because there was not much expansion after the thirties. But the problem is we did not have the infrastructure for the population growth beyond that point, and these new residential areas, as you have indicated, have moved further and further away from the rail network. Ironically, there used to be a rail line to Camden itself up until the sixties. But they have moved further and further away.

Inevitably, people become more dependent on cars and it becomes a catch-22. Governments cater to the cars because that is what people are driving and employment becomes more dispersed. There is less and less reason for employment to be located near major transport centres, so we end up with this virtual, almost 'Los Angelesisation', if you can use that term, of parts of Western Sydney.

**Senator NASH**—On a different issue: obviously, if we could have a public transport network that worked brilliantly and was on time and took you where you wanted to go, it would be tremendous. But what is being done in terms of the safety aspect? Perception or otherwise, I would not get on a train after dark in Western Sydney ever by myself. Regardless of how good it is, that would still preclude me from wanting to use the public transport network. What is being done, or can be done, to overcome that safety issue?

**Mr Gooding**—To be fair to the state government, they have attempted to address that issue. There are dedicated transport security personnel, there are closed circuit TV cameras at a large number of stations. Of course it is different being male, but I have caught trains in Western Sydney late at night for years and, I think in all the time I have been catching them, I have only ever seen one incident.

**Senator HEFFERNAN**—But it has not changed much over the years, has it?

**Mr Gooding**—I think it has. The problem with the introduction of those security measures is that it probably highlighted it, so initially there was a high level of reporting. I do not know that it has increased. I think it has stabilised and it may have started to go down.

**Senator HEFFERNAN**—But I agree with Senator Nash—

**CHAIR**—I think we are getting a little bit off track.

**Senator NASH**—I thought it was quite specific, because we are talking about how to improve the network and how to do everything, and what we can do to encourage people to get on that network. Then if there is a precluding factor like safety, no matter how great and perfect your network is, the issue is getting people to use the public network.

**CHAIR**—I appreciate that. I just think getting now into the detail of the discussion of safety when we are over time—

**Councillor Hay**—Basically, there is safety in numbers. If you can get the capacity back and people are feeling safer they will continue to use it. You have to get beyond that point where there are not enough people for you to feel safe. I think that is what it is. You need the frequency, the efficiency and the reliability, and the safety factor will grow with that.

**CHAIR**—We are over time. Has anybody got any last burning questions?

**Senator HEFFERNAN**—With the fuel thing though, surely one of the quickest ways to lessen your fuel bill is if you had half the size of the engine you would have half the size of the fuel bill.

**Mr Gooding**—That is true. Obviously we would support the shift to smaller cars, and you start to see that. But you also have to bear in mind that people in Western Sydney often have to travel greater distances. They are often people with young families and a small car is not always appropriate in those circumstances.

**Senator HEFFERNAN**—A car that will do 110 or 120 is plenty. You do not need a car that is going to do 220.

**Councillor Hay**—Senator, if I could add to that. With the hybrid vehicles, I have only recently learnt in the last week or so when looking at one of the Toyota Prius vehicles that if you wanted local government to take an initiative to start using those, after they have purchased them they normally like to turn them over after a certain number of kilometres. What I have been told recently is that the warranty on the battery by that vehicle manufacturer will not carry to a second owner. There is a very distinct disincentive therefore for local government to purchase into and start that sort of plan.

**Senator NASH**—Yes. That is interesting.

**Ms Fingland**—I wonder if I could have the opportunity to table a couple of maps that might help the committee? The first map we did include in our submission, which is the ABS index of relative socioeconomic disadvantage in the Western Sydney suburbs. You can see from there that the blue areas are those which we are specifically talking about, where the disadvantages are now concentrated and have been for many years, but they are growing. The second one is a map that comes out of the Griffith University study, looking at the potential vulnerability of areas. You will see that the red and yellow areas are very much in line with the areas of the greatest disadvantage here.

**Senator HEFFERNAN**—Is that the second and third generation unemployment sort of stuff you are talking about?

**Ms Fingland**—There is a lot of that. There are also high levels of migrant concentrations and very high levels of unemployment in some of these areas. You did ask Alex what three things he would do. One of the arguments that we had about the importance of the new north-west, south-west rail line is to provide people in these poorer areas with access to tertiary education opportunities, and to the higher order jobs that exist in other parts of Sydney that they cannot access at the moment. It is an employment issue as much as a transport issue, and I think those issues need to be considered together.

**CHAIR**—Thank you very much. We have until 19 October. If you do want to submit anything else, please feel free to send it to the secretariat. Thank you.

**Proceedings suspended from 11.07 am to 11.24 am**

[11.24 am]

**HARPER, Mr Leonard John, National Chairman and Executive Director, Chartered Institute of Logistics and Transport**

**CHAIR**—Welcome, Mr Harper, from the Chartered Institute of Logistics and Transport in Australia. This is an inquiry into Australia's future oil supply and alternative transport fuels, with references that I am sure you have already read. We have had our time for reporting extended to 19 October. These proceedings are public, although we may agree to requests to hear evidence in camera. You may ask for evidence to be heard in camera and the committee will determine if it should be heard in camera. I remind you that evidence to the committee is covered by parliamentary privilege. It is unlawful for anyone to threaten or disadvantage a witness on account of evidence given to a committee, and such action may be treated as a contempt by the Senate. It is also a contempt to give false or misleading evidence to a committee.

If you object to answering a question, you should state your reason, and then the committee will determine whether we will insist on an answer, having regard to the ground which is claimed. If the committee determines to insist on an answer, you may request to have the evidence given in camera. I will invite you to make an opening statement.

**Mr Harper**—Thank you for the opportunity of being here. The debate on alternative fuels, pricing and effects on pollution has been going on now for close to 40 years, certainly in my lifetime, and the institute has been behind that in a number of ways in terms of summits and conferences designed to find a way ahead for the future. I say 'for the future' because we all recognise that in relation to reserves of oil, gas and fossils within Australia—and, in fact, worldwide, particularly within the developed companies of OPEC groups—shortage is not an issue, reserves being the 30- to 50-year standards and opportunities being available perhaps to even extend it beyond there. The real question is what do we do beyond that period of time?

The institute has been pushing as well as anybody else, and for that reason we welcome this form of inquiry to progressively design an understanding and an analysis of the benefits and costs of going ahead beyond the 30-year program that I am talking about and doing it now, so that we have a firm national government intent to ensure that what we do is understood, accepted and made aware to the people who are going to be affected by it. Our main interest in all of this is ensuring that not only do we become, and remain, an active part of what is happening as a professional group but, importantly, that we are there to ensure that somebody is progressing this in a way that has some effectiveness in the longer run.

**Senator MILNE**—You talk in your submission about road use pricing. Would you like to elaborate on that? You have mentioned the Singapore and London experiences with a congestion tax. What is your view about that?

**Mr Harper**—Clearly, in areas where it has been introduced—I mentioned Singapore because it goes back to the original 1974 model, but it has since been introduced in London and in Stockholm—the principal findings have been reduced congestion, fewer vehicles coming into the CBD area, better use of public transport, as buses in particular have been speeded up through

the more open opportunities of transit lanes, and also the two issues of importance, reduced emissions of pollution and a reduction, although not all that significant, in traffic deaths.

**Senator MILNE**—Did London and Singapore put in all their transit lanes and all that before they introduced the taxes or was it the other way around?

**Mr Harper**—It occurred progressively over a period of time before then. Singapore did not have any transit lanes and London still does not have transit lanes. They got better use out of existing resources. It is the first step of improvement—get better use out of what you already have—and they said, 'We've got space here, let's make sure that that space is better utilised for the benefit of the greater number.' That was the principle that they endorsed. In Stockholm there are bus transit lanes and priority lanes, but they were there before the introduction of this measure. Australia is a very good example, where we have introduced bus lanes in a number of our capital cities. They are not as extensive as they could be. Having said that, it is an indication of what you can do, and you get better use out of the resources—in this case, space—that you have.

**Senator MILNE**—Do you think it would be feasible for Sydney to introduce a congestion tax right now?

**Mr Harper**—It is feasible but it does not have the political gumption to make it happen.

**Senator MILNE**—I am not talking about the political will. Let us assume that we move to a congestion tax for Sydney tomorrow. Is there an adequate capacity on public transport and in relation to rapid conversion to free up enough lanes, to actually get the flow-through that you might require, in order for it to be a realistic proposition?

**Mr Harper**—The issue is not the congestion tax, the issue is the timing of its introduction. You would not bring it in tomorrow. I go back to something I said earlier on: people need to understand and be aware and be prepared to accept changes over a period of time. I am not talking about a 'sell' package, I am talking about the opportunity to introduce a change in a sensible way that will have a minimal adverse effect on traffic flow and the movement of people. The movement of freight is also very much affected. It is something that would need close analysis. In every city of the world where an analysis has been undertaken, I say again: it has never been introduced in those places, simply because there has not been the political will or they have seen the possible fallout that could affect their political standings at the time.

**Senator MILNE**—If you made a decision today to have a congestion tax in Sydney and Melbourne, let us say, what sort of lead time do you think would be realistic before it could be managed at a logistical level?

**Mr Harper**—This has been tried before, so let us not reinvent the wheel. My advice would be to find out the sort of information that we could gather from those who have tried it and seen it work and ask, 'What are some of the things we should do and what are some of the things we should not do?' I would see a minimal 12 months lead time being involved. That would be my advice. Part of that lead time would certainly be in the collection of information in the first few months that would enable me to understand what I should be doing and what I should not be doing.

**Senator MILNE**—Were there any other road pricing initiatives, apart from a congestion tax, that you were thinking of when you wrote your submission?

**Mr Harper**—It is an inherent argument here in Australia that there should be a balanced expense on road and rail charging, and the economic effect of this is important to ensure that there is no bias in the cost and, therefore, in the prices that reflect on either mode that would enable a marketplace balance of road and rail distribution. That is one of the ongoing arguments. I do not want to get too much into that because there are too many details. But, having said that, the government recently decided not to proceed in any further road taxing arrangement but it is not an issue that should be left off the plate.

**Senator MILNE**—You talk strongly in your submission about people having an inherent bias towards private vehicle use and that it will be a big thing to shift them onto public transport—that fuel prices alone will not do it. Yet what we have seen, particularly in Melbourne and Sydney since oil prices have started to really be reflected at the pump, is that in fact there has been a major shift to public transport use and the difficulty is the adequacy thereof. Has your organisation got statistics to demonstrate the resistance because it would seem that that is not the Australian experience?

**Mr Harper**—The organisation draws on the information and research that has been undertaken by research groups in particular. Econometric models that have been developed in the demand for public transport see a major variable being that of population; and certainly one of the more minor elements in that variable model is petrol pricing. I would be prepared to debate the sort of shift that people are saying is moving towards public transport as a consequence of oil prices. There has been no evidence of a strong correlation in that way for that one purpose alone; or whether or not it is in the longer term, other than in the shorter term. What has been shown is that, as petrol prices have increased in the last 12 months, the propensity to consume has remained the same and people have foregone other expenditures on somewhat luxury items. Public transport and movement is not a luxury item. I would suggest that there would be a proportion of the population, who are always at the margin, who would now see public transport as being a better alternative. I would debate the issue that it is a major transference of travel.

**Senator MILNE**—Has your organisation looked at changed behaviour in relation to the train to Sydney airport? Once people used to get taxis and whatever out to Sydney Airport. Since that train has been in there it would seem to me that people are opting for it because it is faster and much cheaper and more efficient to go from the centre of Sydney out to the airport by train than it is to try and get there any other way.

**Mr Harper**—I have a closer relationship to that question than you probably realise. At the time I was the Chief Executive, State Rail and before that the Chief Executive, State Transit here in New South Wales. The advice that was given, certainly from my management to the state government at that time, was that there was an undefined and certainly minimal market that would travel by train to the airport. The major travel at that time was industrial travel, journey to work travel. That was catered for principally by industrial buses and, to a lesser extent, by motor car. That was not a market for train travel into the area. There was certainly the domestic air travel and the international traveller; in 55 per cent of the domestic air travel we were talking

about business people where pricing was not an issue and invariably they travelled by taxi or by motor car, parking their vehicle at the airport, and still do.

The other area of international was one we were not prepared for here in Australia. In the early days of the UK, in London in Heathrow, where we did not have the vehicles, the trains, to be able to provide for the luggage and the space that was required to take people on their international travel, I remember saying to the minister of the day, 'What market is it you are aiming at by putting this particular service in? The primary market is not there as it stands at the present time, and it is not being induced by price,' because the public transport, whilst it was not altogether price sensitive—we were talking about an increase in price from something like $2 to $9 in the use of the station—there was no way that your regular passenger transport travel was going to take advantage of that. Even though over time we have seen more acceptance of the rail travel to the airport as being, as you say, a more expeditious way to get there—and still relatively economical, I would suggest, in terms of pricing—we have not seen the numbers that they forecast and nor do we expect that we will.

**Senator MILNE**—What percentage of passengers use the train out of Sydney? I am interested in that because—

**Mr Harper**—On the airport question?

**Senator MILNE**—Yes, just specifically to get to the domestic airport in particular.

**Mr Harper**—Train travellers, in the main, account for six to seven per cent of your total transport task. I would suggest no more than about two to three per cent of the market—and that is an estimate—would use the railway system going out to the airport.

**Senator MILNE**—Thank you.

**CHAIR**—Senator Joyce.

**Senator JOYCE**—Thank you very much, Madam Chair, and thanks for turning up, Mr Harper. I notice at 5.1 you talk about ethanol:

Ethanol has the benefit of reducing the content of petroleum and also provides a cleaner emission. It is a product that is readily available in Australia and which is not currently used to its fullest extent.

Can you elaborate on that? Can you give me some reasons why it is not used to its fullest extent?

**Mr Harper**—I will take that in two parts. In overseas organisations—and I am talking about transport organisations where ethanol or sulfur reduction has been used—there has been a noticeable improvement in particular of $CO_2$ emissions. That is principally why they brought it through. In Australia we have not introduced that for a number of reasons: (1) because it will cost and we question whether or not the absolute benefit would be there to introduce ethanol to any large extent. The other thing which is important and the second part is that the traditional fuel usage of petroleum and diesel is well balanced at the present time so that the organised groups who sell these products will ensure that commercially their pricing is such that they will not enable alternative fuels to come into the marketplace at this time.

**Senator JOYCE**—Are you suggesting that there is a commercial advantage for the market at the moment, being the oil companies, to keep ethanol out of the market?

**Mr Harper**—Not only ethanol, but alternative fuels to their products, yes.

**Senator JOYCE**—What sort of a suggested mechanism would you think would be applicable to try and get ethanol into the market, seeing that you believe that it is a product that obviously gives cleaner emissions and you have also given a reference here on the last page of your submission, of how it is being used in the US. What mechanisms would Australia have to avail itself of to get this product out to the market?

**Mr Harper**—The federal government has endorsed the use of ethanol and has encouraged it. In New South Wales we have the Manildra establishment which claims to have ethanol in substance that would help in the solution of alternative fuels. The obvious step forward would be for governments, federal and state, to include ethanol as a fuel for their vehicles, in buses and in private motor vehicles.

**Senator JOYCE**—But they do and we still seem to be running into this—

**Mr Harper**—Not in buses they do not.

**Senator JOYCE**—We have 12,000 Commonwealth motor vehicles in Australia. We peaked at using 4.6 per cent of that fuel, being ethanol.

**Senator HEFFERNAN**—Do you mean to put ethanol into diesel?

**Mr Harper**—It can be put into diesel but it needs to be tested as to the value of doing it that way.

**Senator HEFFERNAN**—Are you sure of that?

**Mr Harper**—We were approached by the minister of the day, when I was CEO of State Transport.

**Senator HEFFERNAN**—That does not say a lot, just because you were approached by a minister though. He did not necessarily know what he was talking about.

**Mr Harper**—Let me put it this way: he was my boss at the time so I paid attention.

**Senator HEFFERNAN**—So you just bowed and scraped and so on?

**Mr Harper**—No. I paid attention to him, all right?

**Senator HEFFERNAN**—That does not mean to say he knew what he was talking about.

**Mr Harper**—By all means, but then I do not believe everybody in front of me knows what they are talking about.

**Senator JOYCE**—To your knowledge, do other nations obey strictly the market rules of getting alternate fuel products out—biorenewable fuel products out into the market? Do they just wait for the demand to be at such a point before they start moving ethanol, for instance, out to the market, or is there a concerted government push to move the product out?

**Mr Harper**—I am not aware of any concerted government effort to push ethanol, or alternative fuels, to the marketplace.

**Senator JOYCE**—You have said on the last page of your submission:

A NEW study has found ethanol, the chemical compound produced from corn and other plants, is more energy efficient than previously thought and could be developed as an alternative to fossil fuels.

Then going to the second last paragraph:

While ethanol is not a major source of fuel, it is blended with petrol in some US states and accounts for about 2% of total transportation fuel.

**Mr Harper**—That is not part of my submission, Senator.

**Senator HEFFERNAN**—You are talking about buses—it was a good throwaway line—but you cannot put ethanol in diesel. You can certainly use biodiesel.

**Mr Harper**—I would be advised by that.

**Senator HEFFERNAN**—I think it is a throwaway line that you want to discard.

**Mr Harper**—Not at all.

**Senator HEFFERNAN**—Because if we want to go to biodiesel or alternate fuel but not ethanol—

**Mr Harper**—The comment that I made—

**Senator HEFFERNAN**—Unless you want to go to petrol buses, and who wants to do that?

**Mr Harper**—The comment that I made was that the government—federal and state—could lead the way by ensuring, if they wanted to test the use of ethanol—

**Senator HEFFERNAN**—The Comcar fleet is ethanol based.

**Mr Harper**—It is a drop in the bucket when you start talking those numbers.

**Senator HEFFERNAN**—What else do you want us to use?

**CHAIR**—Were you trying to say that you could use biofuels in buses?

**Mr Harper**—I would be surprised if you could not. I am not technologically qualified to say that, but it was certainly implied to me that that was the way to go by a fairly senior minister of the day.

**Senator HEFFERNAN**—Ethanol in buses or bio?

**Mr Harper**—Ethanol in buses.

**Senator NASH**—To clarify that, if it were ethanol it would have to be an unleaded fuel bus and if it were a diesel bus it would have to be biodiesel.

**Senator HEFFERNAN**—So your poor old mate did not know what he was talking about.

**Mr Harper**—Perhaps that was proved to be the case in later years, Senator.

**Senator JOYCE**—Going onto another issue, I notice in your alternate fuel section you talk about residual oils. Can you give us your own impressions? There is something I want to clarify about shale oils. I know that in the US they have two trillion barrels of shale oils and in China they have three trillion barrels of shale oils, and Australia has 221 billion barrels of shale oil. What do you think are the inhibitors? What do you think is the future of that product?

**Mr Harper**—I really could not give any educated estimate on that, other than to say that, as I brought to the notice of the inquiry, the US is examining the opportunities of being able to use what we would call 'slag'.

**Senator HEFFERNAN**—The price of a barrel of oil is the inhibitor.

**Mr Harper**—It must be.

**Senator HEFFERNAN**—ABARE says it is $70 a tonne and shale—

**Mr Harper**—But within the States, their supply is not increasing. That is one country where their supply of oil and gas is not increasing. I am aware of an option that they are undertaking to see whether or not they might be able to use this ordinarily waste to convert into an economic form of fuel alternative.

**Senator JOYCE**—Are you in favour of ethanol blending in fuels, or not?

**Mr Harper**—No. I am suggesting that it needs to be taken up in a practical way so that we can test the real benefit cost of it. We hear things like, 'No more than 10 per cent, otherwise it will do damage to your engine.' Is that right?

**Senator HEFFERNAN**—It is rubbish. The answer is it is rubbish.

**Mr Harper**—It does not make sense, does it? To me it does not. I am not an engineer or a motor mechanic, but it just does not make sense. If ethanol is in supply, as we are advised, and it can be used more broadly, then why don't we do that?

**Senator HEFFERNAN**—Could I interrupt. I will tell you why: because the fuel companies will want to maximise the benefit of every barrel of oil till the last barrel of oil is gone before they move onto the next one. The best way to maximise is to hike the price as some sort of a shortage, and so they will exhaust uranium and then they will go to thorium and then they will go to lithium and then God knows where they will go. That is what it is all about: it is maximising the profits.

**Mr Harper**—Sure. I understand that.

**Senator JOYCE**—I suppose that is exactly the point. Maybe I am leading you: that unless there is definite government intervention to bring ethanol onto the market, it is not going to happen because in maximising their share price the oil companies are going to keep using their product.

**Mr Harper**—The oil suppliers will not be prompted to bring it in.

**Senator JOYCE**—Why would they start selling their competitors' product?

**Mr Harper**—Yes, exactly.

**Senator NASH**—Good point, Senator Joyce.

**Senator HEFFERNAN**—Not really. I suppose you have been for a walk or a jog this morning. You have run from here to St George this morning. You've done good, mate!

**Senator JOYCE**—I came down from St George.

**Senator HEFFERNAN**—You have proved there is a mobile phone at Thallon or wherever you were.

**Senator JOYCE**—I had to stop at Thallon to get onto Alan Jones.

**CHAIR**—All right, you two can talk about that at lunchtime.

**Senator STERLE**—Madam Chair, the slagging off at the oil companies has answered all my questions, so I will leave the show to move on. I was going to ask some questions, but it has led to where I expected the answer to be from Mr Harper and other senators.

**Senator JOYCE**—We are in agreement.

**Senator NASH**—I am the same as Senator Sterle. It led to exactly where I was headed as well. Senator Joyce has very kindly asked my questions.

**Senator HEFFERNAN**—I have one question. It is the answer that we just gave, but one of the great curiosities in life is that we are selling LNG to Japan for 5c a litre and not using it here. You ask, 'Why is that so?' and we have just given you the answer.

**Mr Harper**—It is the same reason why in countries overseas they have reduced—in fact, the minimal amount—sulfur within the petroleum products, which gives no emissions at all. I was in Sweden some 10 years ago, and it was demonstrated to me that there were no particulates or emissions using non-sulfur fuel on their bus vehicles over there, to the extent that they put a white handkerchief up against the exhaust and there was no evidence whatsoever. I still have that white handkerchief as a reminder of the things that we could be doing here in Australia, if we wanted to.

**Senator HEFFERNAN**—In the last couple of months I have just got onto the most fuel efficient method of transport; because I do not have a drivers licence, I walk. It is a pretty easy way to get about.

**Mr Harper**—It would be hard on the hips, though, Senator.

**Senator NASH**—Mr Harper, in terms of ethanol as a transport fuel, why do countries such as the US embrace it so furiously and seem to be very focused on rolling it out and increasing the usage as quickly as possible, whereas in Australia that does not seem to be happening to nearly the same degree? Do you have a view on why there is that contrast?

**Mr Harper**—Immediately, the first one is the matter of supply. As I said earlier, the US has not seen a great increase within the content of supply in petroleum products, whereas Australia has some resource at least into the next 30 or 40 years, and we are relatively self-supportive and have basically always been that way. That is one of the issues. The other issue is—as has already been discussed—that there is no incentive, nor will there be, on the part of the industry to move away from their base product, where they can manipulate the market in pricing, as we see now.

**Senator NASH**—Thanks, Mr Harper.

**CHAIR**—I have a question from your submission. When you talk about pricing of petroleum and you talk about transport costs being 15 to 20 per cent of total costs, surely that varies depending on the product and where it is.

**Mr Harper**—Of course, it does.

**CHAIR**—So that is an average?

**Mr Harper**—Yes, it is a baseline average. Principally, the road industry, the truckers, will say it costs about 30 per cent in total costs for their fuel costs, including all of their depreciative items, and it would in many cases do that. Some of the larger companies do not have that. You might say, 'Why not?' It is because most of their work is subcontracted and they do not have in-house transport costs as such. But it is of the order of about 15 to 20 per cent.

**Senator JOYCE**—Seeing that oil companies have the ability to manipulate the market at the retail end, would it exacerbate that position if the independents were not in the market—the independent fuel retailers, the independent franchisees?

**Mr Harper**—I would say no. The principal reason for that is that the independents are in the lower numbers and their effect on the market is not going to have that major impact. By the way,

you have the wholesale end as well, particularly within the umbrella of OPEC, where the barrel prices of oil are manipulated principally on the restriction of supply, so it starts there.

**Senator JOYCE**—Who controls that supply?

**Mr Harper**—Principally, the OPEC countries—those under the OPEC umbrella.

**CHAIR**—Thank you very much. We have to report by 19 October. If you have any further information you want to send in, please feel free to send us anything extra.

[11.54 am]

**HUMPHREYS, Dr Len, Board Member, Biodiesel Association of Australia**

**LAKE, Mr Adrian, President, Biodiesel Association of Australia**

**MAPSTONE, Mr Christopher John, Bowral—Marketing Manager—Biofuel, Gardner Smith Pty Ltd/Biodiesel Association of Australia**

**CHAIR**—Thank you and welcome. I am not going to read out the terms of reference because I am sure you know them. We will be reporting on 19 October. These proceedings are public, although you may agree to a request to hear evidence in camera, and we will then determine whether it is appropriate. I remind you that giving evidence to the committee is protected by parliamentary privilege. It is unlawful for anyone to threaten or disadvantage a witness on account of evidence given to a committee, and such evidence may be treated as contempt by the Senate. It is also a contempt to give false or misleading evidence to the committee.

If you object to answering a question you should state the grounds on which you object. The committee will then determine whether we would like to insist on you answering a question. If we do, you may then request to provide that evidence in camera. I would like to invite whoever is going to give evidence to make an opening statement and then we will ask you some questions.

**Mr Lake**—I would like to make a short opening statement, if I may. Australia has an emerging biofuels industry. Several years ago the industry looked to have the support of federal, state and local government. From a promising start with the commitment of the federal government's apparent certainty of intent of the excise position and the energy grants credit scheme, the industry has grown and flourished from zero production in 2004 to about 215 million litres per annum by the end of the first quarter this year.

With projects currently under way or in planning, that will potentially rise to over 1.1 billion litres per year by the end of 2008. This is nearly three times the government's objective for 2010 of 350 megalitres. Forty to fifty per cent of this burgeoning demand will be met by existing oil and tallow production and oils from the oil seed industry. This will be supplemented by used cooking oil collection. It will also mean a constant increased domestic demand, offsetting current exports of fats and oils.

To meet the full demand of 1.1 billion litres, it will also require the importation of some fats and oils to meet that production. That will also create a stable base and a showcase for the establishment of a regional and rural development to meet the increased demand. Potentially this will become a multibillion dollar industry for regional Australia.

The changes to the treatment of biodiesel under the new tax excise regime mean that from 1 July 2006 there will be a severe impediment to biodiesel production. This has the effect of making biodiesel more expensive than diesel. As outlined earlier, the industry has been working

with a time line of 2015 to establish itself with all its infrastructure for distribution, production and integration to market awareness.

Under the current market for automotive diesel oil, biodiesel will become more expensive than fossil diesel. This result can be attributed to the interpretation by Treasury, as borne out in a letter by Mal Brough to Len Humphreys of ABG. The cleaner fuels grant was not intended as a stimulus package for the biodiesel industry. This contradicts the understanding of the intent by members of the upper and lower house as suggested by Senator Brandis on 5 June in the economics legislation committee:

... let us not kid ourselves. The whole point of the package was to provide a stimulus.

The current pricing position, combined with the energy grants credit scheme and rebates for on-road and off-road applications with primary production, has assisted in the creation of a strong demand for biodiesel. There will be a cost to government to maintain the status quo, as sought by industry at the inquiry of 5 June. However, for every cost there needs to be a balance. In this case the benefit would be the formation of a sustainable biodiesel industry with more than $500 million as investment in infrastructure and resulting jobs. This would mean the development of a new agricultural paradigm where regional prosperity will be assisted by the strength of demand from the food energy industries in this nation and internationally.

The support from local councils and government can be demonstrated in that almost all new contracts and tenders show the addition of biofuels. The state governments of New South Wales, Queensland and Victoria are currently preparing a position paper for the adoption of biofuels across the state fleet. The Northern Territory, with the natural fuels plant up there, have made a statement where they intend to use 100 per cent biodiesel in all their fleet. So from state and local government it has been a very strong growth of support.

If industry receives the support that we need federally, the time frame to develop these additional areas of feedstock production—meaning the 500 million litres additional production—would be about five to seven years. Without the assurance of demand over the long term, this is not going to happen.

I have with me representatives from the biodiesel production side of things who are Len Humphreys, currently CEO of the largest biodiesel producer in Australia; Chris Mapstone from Gardner Smith who has taken a very strong position and has been a very strong supplier of fats and oils, and also an oil seed crusher in Australia. I also have letters of support from the Australian Oilseeds Federation, who have announced their intent to work more closely with the biodiesel industry and the association to develop these agricultural opportunities, and a position paper from the state government showing the current potential for biomass and biofuels using current agrinomic systems. Thank you.

**CHAIR**—Senator Joyce, I think it might be your turn first.

**Senator JOYCE**—You talk about the cost trade-off. Can you elaborate on that? In this current bill that is before the House, can you explain some of the sections of that bill that are going to have the effect of reducing the capacity for you to remain competitive in the market? I know you touched on them, but can you just give a little bit more elaboration on exactly that issue?

**Mr Lake**—Certainly. Under the current system with the combination of the producer grant and the effect of the offset of excise, and also the energy grants credits and other schemes available for biodiesel and all other alternate fuels, the new bills which are to be enacted as of 1 July effectively reduce and wipe out the energy grants credit offset in a very short time frame. The way the tax system is evaluated effectively puts an additional 38c for all on-road and off-road applications for biodiesel. I have with me a copy of a paper which was tabled on the 5th which shows the change in ballots, where biodiesel in an establishing market can be a cost benefit at the moment and, as of next month, there will be a cost penalty to adopt it.

For the case of on-road applications that penalty is anywhere from about 10c. By 2015 it goes up considerably. For off-road applications it is effectively the full excise rate.

**Senator JOYCE**—B5 is still seen as five per cent. That is being produced by the major oil companies at the moment, and will still get the—

**Dr Humphreys**—Sorry, Senator. That is not actually being produced. There is no oil company today blending B5 in any shape or form.

**Senator JOYCE**—So they are not in the market at all?

**Dr Humphreys**—No, zero. Let me give you, if I may, two examples of the impact of the changes that you rightly refer to. Let us do an on-road with a trucking company and off-road with a farming situation. Today, if a farmer buys biodiesel, he can claim the excise for that biodiesel back providing he or she does not blend greater than 49 per cent. So providing you have a fuel mix that does not exceed B49—that means 51 per cent fossil and 49 per cent biodiesel—they can claim back the full 38c on that fuel blend, as if it were classed as a diesel. As of 1 July with the legislation before parliament as currently written that disappears. They cannot claim anything back on the biodiesel as of 1 July because of an interpretation that says as of 1 July you can only have a user grant—that is, the refund of the excise—on the net tax paid. The net tax paid is actually the killer statement and it is where the dislocation happened with what the Senate economic committee decided several years ago, which was the stimulus package for the biofuels industry.

**Senator JOYCE**—That actually runs contrary to a former government policy.

**Dr Humphreys**—It is the first time ever that I have been firmly saying that we are now at sovereign risk in our own country. The industry is now exposed to sovereign risk in its own country.

**Senator HEFFERNAN**—But the incentive that you say was put in place by the guidance of whatever committee it was however many years ago surely did not work?

**Dr Humphreys**—No, it did work. It has created a—

**Senator HEFFERNAN**—Where do you buy B49?

**Dr Humphreys**—You can buy it from us. We are the largest producer of biodiesel in Australia. We have capacity coming online as of 1 July of 200 million litres a year of biodiesel.

**Senator HEFFERNAN**—You cannot pull into Junee and buy it.

**Dr Humphreys**—That is partly because of the problem I just discussed with Senator Joyce about the refusal of oil majors to allow us to distribute. It is not refusal. Passive resistance I think is a better term.

**Senator JOYCE**—Where does the passive resistance come from?

**Dr Humphreys**—The passive resistance comes from the oil companies in an array of reasons why they are looking at it but have not quite done it yet. Each time we tend to answer one set of conditions, another A4 page comes with a new set of conditions for us to jump through.

**Senator JOYCE**—Can you come up with any reason why the oil companies would have this passive resistance?

**Dr Humphreys**—The reason is that they have a very well-established market from which they make a very nice return and they are resistant to disturb that market, as any company would be.

**Mr Lake**—There is also the issue for them of additional. infrastructure that has to be put in place, because it is another fuel in the mix. For them to justify spending the hundreds of millions of dollars it is going to cost them, they need to know that production is going to be available consistently. Len is correct but also you have to put it in perspective. The plant at Berkeley Vale which is currently 45 million litres a year, has only really been in full production for about six months, so it is a fledgling industry and it is quite amazing how quickly it has grown, but most of that adoption of biodiesel usage has been by fleets and agricultural major distributors who then on-sell it to farmers.

**Senator JOYCE**—With this cost, by the 2015 time horizon, which is what your business plan was designed around—is that correct?

**Dr Humphreys**—Correct.

**Senator JOYCE**—The 2015 time horizon has now gone, hasn't it?

**Dr Humphreys**—No. That is not absolutely true. What happened, to give you the full picture, the term 'producer grant' was used to stimulate the industry. The reason you cannot buy it today, Senator Heffernan, is that we are just on the verge of making an industry of substance such that we can deliver volumes to the rural and trucking industry. The stimulus package has been very successful. It has encouraged a lot of investment and a lot of activity in building new plant. Then, just as we are on the cusp of doing it, the door has now been slammed close in the face of this ability of what has been built and the future expansion of a potentially profitable and very stable biofuels industry.

**Senator JOYCE**—What I am alluding to is that that was not anticipated, that change.

**Dr Humphreys**—That change was not anticipated.

**Senator JOYCE**—The term net tax paid, which is causing the grief, was not an anticipated change, and fundamentally changes the business plan for which you set out your capital expenditure budget at the front end.

**Dr Humphreys**—That is a correct statement.

**Senator JOYCE**—The ethanol people were here earlier and they said they have done it from A to Z, greenhouse, all the credits et cetera: have you done a business plan that just shows how efficient from the tractor that sowed the canola right the way through to the—

**Mr Lake**—Yes. Round 2 of the life cycle study which was done by CSIRO and the Greenhouse Office shows an average life cycle efficiency greenhouse of tallows being about 45 per cent, canola being about 55 per cent and used cooking oil about 95 per cent. So you could take the whole biodiesel industry, just using that, and there are a lot of disagreements between the biodiesel industry and the approach of ABARE and CSIRO; but even assuming that study is accurate, there is an average reduction of greenhouse emissions of about 35 to 45 per cent.

**Senator HEFFERNAN**—Did that study include at the factory door or the collection hub?

**Mr Lake**—From the farm to the pump.

**Senator JOYCE**—Do you have any idea what the excise gain will be for the government by reason of this change? What is actually the cost to the government of not putting in that net tax paid? What is the cost? We are trying to develop the bioreneweable fuel industry. We had a former government policy to do that. It was in place. It was supposed to happen to 2015. It is not going to happen to 2015. That would be driven by Treasury because they are trying to get the money back into the coffers. How much are they getting and what is the cost of it?

**Dr Humphreys**—The government set a target of 350 million litres as the national target for biofuels. If we could just focus on that, you would have to say that if that target was met then, under the current status, that would probably cost the government 38c times 350 million.

**Senator STERLE**—I think $1.2 billion is the estimate.

**Mr Lake**—That is right. There were numbers being bandied around of about $1.2 billion.

**Senator JOYCE**—That is what the cost is now or what the cost will be?

**Mr Lake**—That is what the cost will be. That is assuming the 350 megalitre target at 38c. That is at the full 38c.

**Dr Humphreys**—That is over an extended time period.

**Senator JOYCE**—What we are going to have is a transition area in any case down the track, so they will actually be collecting that revenue back. Do you believe after a period, if you were still allowed to go to that 2015 horizon, that your industry would be in a position where it would have economies of scale and the size to be able to start dealing back?

**Dr Humphreys**—Absolutely.

**Senator HEFFERNAN**—And globally competitive? The ethanol industry told us this morning they are not interested in having an ethanol industry that is not globally competitive.

**Dr Humphreys**—I think any industry has to be globally competitive.

**Senator HEFFERNAN**—So what is the bottom line on the price of canola to make your thing stack up?

**Dr Humphreys**—It is not just canola. We can run a variety of—

**Senator HEFFERNAN**—Yes, but as an instance.

**Dr Humphreys**—About $800 a tonne.

**Senator HEFFERNAN**—Thank you very much for that.

**Mr Mapstone**—That is crushed oil.

**Senator HEFFERNAN**—Right, so it is 42 per cent oil—

**Dr Humphreys**—That equates to about $370 a tonne for seed.

**Senator HEFFERNAN**—It is doubtful whether we would want to grow it for you for that. Forget about us. We are not interested because we cannot get a quid out of canola. It is right on the cusp.

**Senator NASH**—What volume of biodiesel are you selling into the market for off-farm use currently that would be claiming the excise up to that B49?

**Dr Humphreys**—Today we are supplying very little into the farming community because our initial offtake has been mostly into independent retailers and trucking companies.

**Senator NASH**—So the change on that would be more—you are looking at it as a disincentive for farmers wanting to do that if they cannot claim that 38c rather than a change from a current practice?

**Dr Humphreys**—To fully understand, we have a lot of interest during the growing and ploughing season from the farming community. We had a campaign over the summertime. There is a massive amount of interest. The reason we did not fulfil the interest was because we did not have the logistics set up to drop off the volumes that farmers need and farmers have locations for. We started equipping ourselves, preparing it for the next season, but that is unlikely to happen now.

**Senator NASH**—If you could do that—say there was some form of cooperative set up or whatever, whereby you have got a bulk handling facility that you could deliver into—at what price per litre could you do that for today? It can be used at 100 per cent—

**Dr Humphreys**—We deliver in bulk quantities at between $1.08 and $1.10 per litre, which is about 30c below fossil diesel, so it is a massive saving. You are fully aware, Bendigo Bank are doing a trial study at the moment and they are acting as the aggregator to move it out to their customer base in a rural environment.

**Senator NASH**—Any idea how much the transport costs will be? I imagine that is just the initial cost, the $1.08 to $1.10. In terms of transport costs on top of that, to get it from A to B, is there some kind of per kilometre rate of the average add-on?

**Dr Humphreys**—Yes, there is. It was inside a 50- to 70-kilometre radius of the production site. That is about 1.5c to 2c a litre. I will give you the full scale. If you are going from Sydney to Melbourne type distance, that is about 5c a litre, which is a massive distance. So you have got to have a sliding scale between 1½ and 5c a litre.

**Senator NASH**—Even on a worse case scenario you are still looking at 115c.

**Dr Humphreys**—Correct.

**Mr Lake**—What is important in that scenario is if biodiesel does have the right incentive. The plants which will be built around Australia include a lot of regional plants, so just for example in New South Wales you have the current one at Berkeley Vale. You also have the one at Rutherford. There are plants planned for Albury; at Moama—expansion. There is Deniliquin and Rockdale Beef are also doing one as well, out west, and there have been several other projects.

**Senator HEFFERNAN**—What are they mostly based on?

**Mr Lake**—In the case of Rockdale Beef it is obviously tallow. A lot of them are looking at doing their own crush or expanding their own crush and doing it from oilseed.

**Senator NASH**—If I can come back to your earlier point about the changes, just to make sure I have got this right, if a farmer from 1 July wants to use 100 per cent diesel or 100 per cent biodiesel blend; the 100 per cent diesel, they will be able to claim that 38c back?

**Dr Humphreys**—Putting it in perspective, that farmer could buy biodiesel today delivered for, say, $1.15. They could then claim the 38c off that $1.15. Who is good at sums? What does that take it to? About 75c. Today that farmer can buy biodiesel at 75c compared to fossil at an equivalent price of $1, so he is saving 25c a litre. Before excise, on a like-for-like basis, that farmer would be paying 75c a litre for biodiesel and $1 for fossil today. As of 1 July he is paying $1.15 for biodiesel and $1 for fossil. What would you do?

**Senator STERLE**—May I add that the bill that we are going to be debating may be in the next two weeks sittings, but there is a sting in the tail because there is an offset alleged balance to the on-road diesel grant. We are really moving into territory where one part of the community will feel disadvantaged and another part of the community may see an advantage.

**Dr Humphreys**—That is a true statement, but even the on-road advantage is diminished.

**Senator STERLE**—Yes, it is, make no mistake. It is watered down or disappears over allegedly five years so it is a bill that we all need to put a lot of—

**Mr Lake**—I have a description here which makes the effect of the change very clear.

**CHAIR**—Jeff, there was another tabled as well, wasn't there?

**Mr Lake**—I have several which I can—

**CHAIR**—Didn't you table the evidence that you gave on Monday?

**Mr Lake**—Part of that is from Monday. There are two others from here which are unrelated.

**CHAIR**—Thank you.

**Senator NASH**—The B49 component that the excise was claimable on, why did the government have a 49 per cent component? Why were you not allowed to claim for—

**Dr Humphreys**—I cannot accurately answer that.

**Mr Lake**—Effectively it was an excise loophole which Treasury sought to close as quickly as possible. Treasury's position from day one has been—

**Senator HEFFERNAN**—It was not intended.

**Mr Lake**—It was an unintended benefit. A lot of lobbying has been done since 2000 while we have been developing the infrastructure, the tax position and the standard for biodiesel to get support for the best applications of ideas. There were several statements by Mr Howard that biofuels should be implemented where they provide the maximum benefit. His interpretation of that, as far as announced policy, has been the on-road transport. Biodiesel has a lot of clearly demonstrable advantages. In off-road applications we have a lot of interest from the state government here for Sydney ferries. There is currently a trial under way with Sydney ferries. There is also a trial under way for Brisbane City Council with their ferries. There are a lot of fishermen who would like to be able to access biodiesel cost competitively where they can mitigate their impact on the environment which basically is their livelihood which they do not have access to.

The B49, which benefits more agricultural and less sensitive environmental areas, came about through a loophole of legislation where the excise definition of diesel is any blend of diesel and other product where diesel oil makes up greater than 51 per cent. For the purposes of fuel quality, there are other definitions. That is where a lot of the whole five per cent and all the other stuff gets very blurred and becomes confusing. The reason this has not been very clear from industry is because most people simply have not been able to understand it. A lot of ministers we have spoken to have not been able to understand it. A lot of people within the Tax Office have even been calling to ask, 'How does this actually affect you? How does this all work?' It is a

very complex situation in that Treasury, making a simpler system have said, 'Okay, we will do what we do best, which is balancing the inputs with outputs.'

**Dr Humphreys**—The problem is that the new system throws the baby out with the bathwater.

**Senator HEFFERNAN**—It is not a new system. It is sorting out an unintended consequence of an old system.

**Mr Lake**—No.

**Senator HEFFERNAN**—You said it was a loophole.

**Mr Lake**—B49 specifically was a loophole and the industry with the agricultural applications—and this is one of the areas where there is a lot of demand and you can see from some of the plants which are happening in the regional areas, will be supplying that regional demand—disappears.

**Senator HEFFERNAN**—Can I go to the heart of the problem for me, which is the heart of the problem for ethanol. We have had the lot feeders in saying, 'We don't want the price of wheat to go up, otherwise we won't be able to put our cattle through the feedlot.' Obviously you have to have this input parity argument. The difficulty I have with what you have told us this morning is that the price of canola, at which you want it to be, is going to put us out of business to grow the canola.

**Senator JOYCE**—But you will not be able to buy it unless you pay the right price. You realise that?

**Senator HEFFERNAN**—But you have told us you cannot produce it and be competitive unless it is $800 a tonne for crushed oil?

**Dr Humphreys**—It purely depends on the price of fossil fuel.

**Senator HEFFERNAN**—Do not change your mind. That is what you told us.

**Dr Humphreys**—That is.

**Senator HEFFERNAN**—At the present time, the canola might reach $500 a tonne for the raw product of 42 per cent this year. For seasonal purposes, because there is a world cartel in fertiliser, we have to pay record prices for fertilisers and fuels. Please do not ask us to produce your canola for $350 a tonne.

**Senator JOYCE**—You do not mind going out of business because you cannot buy the canola at the right price. You just do not want to go out of business because of a change that has been brought in that was never foreshadowed until 2015.

**Senator HEFFERNAN**—All right, I accept that. But what if canola is $500 a tonne? Will you still produce biodiesel from it?

**Dr Humphreys**—We can still produce biodiesel.

**Senator HEFFERNAN**—And not go broke, I mean?

**Dr Humphreys**—Sorry, you are saying the seed?

**Senator HEFFERNAN**—Yes, 42 per cent oil is the average—but 38 per cent, you know—

**Mr Lake**—A lot of that will depend on the meal market. That is one of the restricting factors.

**Senator HEFFERNAN**—But you are seriously restricted by the price of the base product?

**Dr Humphreys**—As any industry would be, yes.

**Senator HEFFERNAN**—Well, best of luck.

**CHAIR**—Senator Milne.

**Senator MILNE**—Just to go on from there, the issue here is about oil prices, which is driving up the fertiliser price, and also if we had a carbon tax that makes the whole equation very different.

**Dr Humphreys**—That is true. I understood that fuel was one of the major costs of running a farm. I talk about life cycle. It is the benefit that also comes back to farmers in a lower priced fuel. A farmer can buy diesel from us at 75c a litre today, compared to buying it for a dollar. What is a farmer also saving in the running of their farm as well?

**Senator HEFFERNAN**—Can I put that in perspective for you. A 120 horsepower tractor of yesterday uses more fuel than a 200 horsepower tractor of today. Fuel is becoming less of the equation; fertilisers, chemicals and a whole range of other things is more, but fuel is important.

**Mr Lake**—There are other aspects to this, and the implication of not having a biodiesel industry.

**Senator HEFFERNAN**—I am for the biodiesel industry. I just do not want us to go broke, trying to keep you—

**Senator JOYCE**—They are not asking for legislation to quarantine the price of canola, Senator Heffernan.

**Mr Lake**—Industry will have to meet whatever price the commodities run at. It is part of any equation. You cannot have growth of this scale without having a major impact and change of balances. It is one of the reasons we have sought to work with AOF. It is one of the reasons I have had a working relationship with the New South Wales department of agriculture, now DPI for nearly five or six years; working with and educating different levels of state government so that they can understand it.

Because of the time delay in all that happening, it has been a five-year process where, all of a sudden, now it is becoming part of discussion papers and part of the process of their understanding. They are trying to work out how it is going to be integrated, because they can see these numbers being real. To go from those numbers being real to the regional benefits becoming real is another five or seven-year delay. But they cannot, and will not, spend that money unless that is going to be there in the long term. That creates a whole lot of opportunities for growing, research on different forms of brassicas, mustards and lower fertiliser requirements. There are other oilseeds which are being looked at. So all these other agronomical opportunities which do not exist in the current food market become possible for the sake of a biodiesel industry.

This is one of the areas covered by this report, which I did not table. You can table it, or get the electronic copy. Part of the New South Wales strategy is looking at a wide variety of biomass technologies. Biodiesel will become part of that, but one of the spin-offs is if you are going to create a massive amount of meal from a massive amount of oil being produced, what do you do with it?

**Dr Humphreys**—Let me also interject a point for Senator Heffernan as well. There is a lot of work going on. Some research of which I am aware is on today's canola seed, particularly an edible variety for human consumption. There is work going on about customising a seed that could be used for biodiesel that does not have to have all of the fertilisers and care and attention as some of the current edible varieties grown. So there are other ways we could work together, towards making sure that both industries are profitable.

**Senator HEFFERNAN**—The difficulty with that is they still have blackleg and all these other things you have to deal with.

**Mr Lake**—That is accepted, and that is also more of a problem with the current varieties that are being grown commercially. We are talking about different opportunities which do not exist today because there is the potential for a new industry.

**Senator HEFFERNAN**—As an industry, you would be prepared to apply to import canola to keep you viable if the domestic—

**Mr Lake**—It most likely will not be canola. The most freely available—

**Senator HEFFERNAN**—No, but if the import parity crosses over, you would have a shot at importing it to keep you alive?

**Mr Lake**—Yes, we have to survive as an industry.

**Mr Mapstone**—Senator, we already do import soya bean oil and palm oil. There is the cottonseed crush that is available as well.

**CHAIR**—I would like to come back to this question but, if we could follow an issue through to its end, that would be extremely helpful. Senator Milne?

**Senator MILNE**—We were talking about short-term government initiatives and so on but the problem is, in the absence of a price on carbon and in the absence of internalising the

externalities of fossil fuel, you are always going to be behind the eight ball in arguing this case. I am assuming that the biodiesel industry would like to see a price on carbon immediately, either through an emissions trading scheme or a tax or whatever, in order to get some true cost competitiveness into the industry. Is that the case?

**Mr Lake**—Obviously, the industry would like to see that, because seeing the real price of the current energy sources is going to wake people up to the cost of what they are doing. It also helps offset some of the establishment of infrastructure. One of the reasons there has been such a large capital interest and investment to date, given the previous position for excise, has been because biodiesel can use a wide variety of fats and oils, as has been facilitated by the standard.

That has meant that we have been able to be competitive in a wide area of Australia, as opposed to where you grow just wheat or where you have access to molasses. That has literally gone from what the government perceived—and this was argued back in 2002 when the position of 350 megalitres was being established—that we were going to blow that out of the water, and no-one believed us at the time. The reason that that has happened is because there are economies of scale. It is actually a very low-cost process to establish. Given the right infrastructure and the right time for it to be developed, we can be highly competitive against fossil fuels.

**Senator MILNE**—Yes, but the problem you have is that your growth is constrained by the volume area you have to grow the feedstock, whatever that might be—obviously if it is not tallow, but even then you have all your land and growth costs, as Senator Heffernan said. You are already importing, as you said, palm oil and soy. The global ramifications of that are the massive clearance of tropical rainforests around the world, releasing huge amounts of carbon. That is one of the biggest drivers of greenhouse gases. The Amazon is now going down fast because of the biodiesel market in the US. The same applies to Indonesia.

I would argue that the palm oil coming in from Malaysia to the Darwin plant is a huge risk for you, because there will be a national campaign against this not being a green industry, because it is driving deforestation in the region. Unless you can discount imports of oil from overseas to drive this and unless you can establish an industry that is self-sufficient, the industry will be destroyed because of the ramifications of biodiesel from overseas. How carefully have you looked at this?

**Mr Lake**—If you look at the objectives of the association at its formation in 2000, sustainability of feedstocks was first on the list. It is a catch-22, because you need economies of scale before you can drive the agronomic machine to start supplying the resources to the industry. I have done a fair amount of travelling through South-East Asia over the first half of this year, and in a lot of areas they are talking about expanding the palm oil industry. It will never happen, simply because they do not have the infrastructure and the area is too rugged to expand into. It has also discounted the fact that massive deforestation has already occurred and there are millions of hectares of suitable arable land, which are literally grassland and need to be tendered for, and it has a massive societal benefit if these areas are developed.

**Senator JOYCE**—How much of the Australian industry do you intend to get up and running with imported product as opposed to domestic product?

**Mr Lake**—Initially, if we achieve the planned billion litres, it will be almost fifty-fifty. A realistic time frame to supplement that with local production will be somewhere in the order of five to seven years.

**Senator HEFFERNAN**—That will be price driven?

**Mr Lake**—That will be price driven.

**Senator NASH**—How are you going to do it if the oil companies still keep giving you the negatives and you cannot use them as a distributor? How are you planning to distribute it if they continue to say no?

**Dr Humphreys**—Today we distribute to what we call independent retailers. There is a dwindling presence of independent retailers that still stand against the large multinational chains. We have probably all the east coast independents taking biodiesel.

**Senator NASH**—If the oil companies say that the infrastructure costs are prohibitive in terms of changing over, then surely the—

**Mr Lake**—They are not necessarily prohibitive. One of the questions they ask is, 'Is biodiesel going to be round long enough to make it worthwhile to make the change?'

**Senator NASH**—But my question is, when the oil companies are obviously the Goliath and the independents are David and they are able to make the changes to distribute your product—is that correct?

**Dr Humphreys**—There is no real change they have to do. Most of them blend at B5 or that area. There is nothing different. It goes through the same pumping system.

**Senator NASH**—They just blend it straight across the board?

**Dr Humphreys**—They blend it straight across the board.

**Mr Mapstone**—They just blend the B5. The legislation states they do not have to brand the pump to say so. It is just diesel. If they blend higher than a B5, then one of the issues that they have is that if they only have one diesel tank at the service station, they would change it over and brand it as biodiesel.

**Senator JOYCE**—As part of you getting this product out, are you concerned at all about any legislative things that might be in the wind that could undermine the position of the independents in the market?

**Dr Humphreys**—Terrified.

**Mr Mapstone**—The sites act, for example.

**Senator JOYCE**—Yes, changes to the Petroleum Retail Marketing Sites Act and the Petroleum Retail Marketing Franchise Act.

**Dr Humphreys**—We got comfortable that we were not exposed to sovereign risk once the government made its mind up about a stimulus package. Now we realise we have been exposed to sovereign risk and anything is possible in future.

**Senator HEFFERNAN**—Where is the sovereign risk?

**Dr Humphreys**—The government made its mind up to put a stimulus package together several years ago. The senate committee on one day agreed that was the intent. Now the government is saying, 'Hard luck.'

**Senator HEFFERNAN**—What you are saying is that we have to be self-sufficient in fuel. What do you describe as sovereign risk?

**Mr Lake**—That is using that in a commercial sense, meaning that you go in there with a known government position, assuming it is going to be supportive of your industry.

**Senator HEFFERNAN**—Thank you, that clarifies that. Earlier in the year, there was a promotion and some good publicity. I am keen to support biodiesel but one of the things that came up was that for $20,000 or $30,000 you could have an on-farm plant.

**Mr Lake**—That is not from the association. There have been people promoting that.

**Senator HEFFERNAN**—It does not sound true to me, given what you have been saying here today.

**Mr Lake**—There is the opportunity for reasonable development of smaller biodiesel plants, assuming they are able to—

**Senator HEFFERNAN**—But the blurb was that for $20,000 or $30,000 you can do it on your own farm with your own canola.

**Mr Lake**—There have been people promoting that, yes.

**Senator HEFFERNAN**—Is that, 'Proceed with caution' on that?

**Dr Humphreys**—Yes. We have not been promoting that.

**Senator HEFFERNAN**—That is a dead duck, is it? You can put it on the record. You can say anything you like here.

**Mr Lake**—It is not a position which the association has been pushing.

**CHAIR**—Senator Milne has not finished, Senator Sterle has not asked any questions and I have a few myself, so can we be a bit more disciplined?

**Senator JOYCE**—Why is the sites and franchise act an issue for the sustainability of your industry? Other people might not be aware, so for the record would you tell us, just briefly?

**Dr Humphreys**—If the sites act and the franchises act go ahead, it would make it exceptionally difficult for anybody but oil majors to own retailing outlets for fuel.

**Senator MILNE**—I want to come back to feedstock for this industry and the displacement of food crops and so on. Realistically, how much research have you done about going into areas that are currently infertile, that are not producing food crops of any kind: what potential is there for that?

**Dr Humphreys**—We work closely at understanding how we can help to stimulate and grow our suppliers of feedstock. One of those areas is that today the biodiesel industry is very dependent upon edible oils. There is a new form of feedstock on the horizon that is being planted out in a number of major continents, that produce non-edible oils. The two particular varieties that tend to be taking prominence in these plantations are a bush type seed-bearing plant called *Jatropha* and a large oilseed-bearing tree called *Pongamia*. *Pongamia* is a native of Queensland. It is used as a decorative tree around a lot of the Queensland roads. You often see it with a large nut type thing.

*Pongamia* and *Jatropha* are both drought tolerant and infestation resistant, so they can grow in land that you would not normally be able to grow edible crops in. Also—partially going towards answering your question about deforestation—you could put trees in places where normally trees would not be, in Australia particularly. There is a whole opportunity in the Northern Territory in the higher rain belt and also northern Queensland to put up *Pongamia* trees. After seven years they produce the nut, the oil-bearing seed. They go on producing that seed for 100 years, so once you have this plantation it produces non-edible oil and that would add towards not competing with the food chain and add to afforestation as opposed to a deforestation program.

**Senator MILNE**—Did you say it is high-rainfall dependent?

**Dr Humphreys**—No, they are very drought tolerant. I am saying it would grow particularly well in that area that traditional crops have not been successful in.

**Senator MILNE**—Has this research been in conjunction with the salinity taskforces and the like?

**Dr Humphreys**—We have not approached the salinity taskforce. I cannot say if it is or not; maybe they are aware of it. *Pongamia* is fantastic for that. It is a legume and it has root systems with taproots going down to 15 metres. It can keep the water table down in a high-salinity area, so it can add to the improvement of soil quality and reduction of salinity.

**Senator MILNE**—Part of the CRC's work is flora search, which is looking at any plant species in Australia—and overseas too, but particularly in Australia—so I presume that they are looking at it.

**Mr Lake**—Another part answer to that question is that there are other cropping opportunities. One of the limitations of the forms of canola and mustard seeds that are grown in Australia for edible oil is that you can only grow them in a very limited latitude band. When you start looking at some of the mustard seeds or brassicas which are being looked at for biodiesel use, there is a

higher latitude that you can go to which means you create an opportunity of an additional break crop in those areas, reducing some disease cycles.

**Dr Humphreys**—We announced two days ago we bought a crushing mill at Moree which at the moment crushes canola, cottonseed and sunflower. In conjunction with that we are looking at planting out a new type of mustard seed that grows in more marginal areas that are not being particularly successful.

**Senator HEFFERNAN**—Where are you talking about? Where is the marginal area around Moree that is different to where we are growing the wheat in Moree? What new areas are you putting out?

**Dr Humphreys**—We have a group of people in our company that are doing that. I can get the information.

**Senator HEFFERNAN**—What I am looking to is what rainfall, what soil type—because most of the cropping area is sustainable up there.

**Dr Humphreys**—We have that information. I do not have it with me.

**CHAIR**—Could you take that on notice and send it to us?

**Dr Humphreys**—Yes.

**Senator MILNE**—It would seem to me that the best chance this industry has is being able to demonstrate that it can solve a lot of ecological problems and go outside existing food production areas and not displace those. Unless you can demonstrate that, I think it will be very difficult for biodiesel to have a long-term future in terms of the agricultural sector.

**Mr Lake**—It will end up being a combination of both breaking into new areas which are currently not viable either for food crops or marginal for food crops and also providing additional break crops.

**Senator HEFFERNAN**—A second ago you said it was going to be a break crop, didn't you?

**CHAIR**—Potentially?

**Mr Lake**—Potentially.

**Senator HEFFERNAN**—Which imputes that it is viable to grow some other crop there?

**Mr Lake**—Yes.

**Dr Humphreys**—Which is why I am interested to know where is this new frontier in the Moree district where they are not already growing it?

**Mr Lake**—I have had discussions —this is not so much recently—with the Grains Research Development Council and the Oilseed Federation. They have been looking at areas where currently they do have endemic problems with cereal crops and they do not have choices of break crops.

**Senator HEFFERNAN**—Yes. I recognise those.

**Mr Lake**—Also more importantly in Western Australia where the oilseed crops grown as break crops have not been viable because the cost of transport is far too expensive.

**Senator HEFFERNAN**—Yes, I recognise that.

**Mr Lake**—Already with the current situation, which is in doubt, there are a couple of canola biodiesel based projects which are based on creating a market for that break crop, exporting the meal from Western Australia and then using the oil locally for biofuels.

**Senator HEFFERNAN**—What I was really trying to get to through you, Madam Chair, with your patience—

**CHAIR**—Yes. You are pushing it.

**Senator HEFFERNAN**—is that you are getting down into the one in three wheat country, which I think is marginal that it should be cropped at all. I am wondering if you are trying to do business out there.

**Mr Lake**—We are not specifying any specific areas. We are just highlighting opportunities at this point.

**Dr Humphreys**—We are specifying areas.

**Mr Lake**—As an industry representative, he is specifying areas.

**CHAIR**—Can you take that on notice and send us that information? That would be much appreciated. Senator Sterle, patience is a very great virtue.

**Senator STERLE**—Thank you, Madam Chair. I want to direct this to you, Dr Humpreys: let us simplify it. Everything was going along in your industry quite comfortably until the proposal of the new bill—this consequential tax, fuel or whatever. This is what it really boils down to. First, I am going to put my hand up and say I hope our farmers get the most dollars for their seed. Make no mistake about that.

**Dr Humphreys**—So do we.

**Senator STERLE**—We got a little bit waylaid and we digressed. What it virtually means—and please correct me if I am wrong—with your industry now losing that comfort zone of not copping the excise, biofuels will not be competitive within the fuel market to supply your traditional supply, whether they be farming or rural communities or trucking companies or

whatever. Am I right in assuming that if you lose that ability to be competitive without paying the excise, that you will not be competitive with international ethanol?

**Mr Lake**—It is a totally different market. It is totally irrelevant to the biodiesel argument.

**Senator STERLE**—Okay, so your buyers are 38c a litre better off now. That is correct, isn't it?

**Mr Lake**—Biodiesel is, in a lot of respects, a superior product than petrodiesel. It is a new product entering the market, therefore as a new product people are wary of it. There are barriers to its introduction. There is education of oil injectors and the OEMs and all these are major obstructions, so you have to provide an incentive for someone to use it. Farmers traditionally have been major supporters of all biofuels and love the concept of biodiesel. They have been one of the least able to access it. There have been requests from all the different departments, or DPIs from different states, saying, 'How do we make this work?' It has finally got to the point where it is real enough that they are putting serious money, time and resources into looking at the alternatives, which answers Senator Milne's questions—over the next five or seven years—so it does become a sustainable industry.

The problem we have is that we do have so many doors in front of us that unless we have the right incentives to drive it and to pay the cost of that additional infrastructure, because it will initially be in parallel to the oil infrastructure, we will then have the opportunity to independently—because biodiesel can, unlike ethanol, be used one per cent or 100 per cent. We are not reliant on petroleum markets. We are supplemental to them.

**Dr Humphreys**—Ethanol has to be blended in petrol before you can get it to market. Biodiesel does not.

**Senator STERLE**—What I was leading to—when this bill is debated and if it gets up—you guys are virtually uncompetitive?

**Dr Humphreys**—Yes.

**Senator JOYCE**—You are reliant on independent fuel stations to get your product out.

**Mr Lake**—No, not necessarily—well, for retail.

**Mr Mapstone**—The two industries operate totally separately from a marketing point of view. With ethanol you have to blend it as an E10 blend maximum and you have to sell it through a retail network, whereas with biodiesel you can sell it as a B5 or 10, 20, up to B100 and you can choose not to go through retail. You can choose to go through, as a wholesale—as a distributor you can sell to primary production, you can sell to direct end users, fishing fleets. You can sell to transport companies so you do not need to have a retail network to move the biodiesel.

**Dr Humphreys**—To put that in perspective though, if this act comes in as it is foreshadowed, the only market that remains with any chance of margin competitiveness is independent retailers. It is the only one left.

**Mr Lake**—Four or five per cent through majors.

**Senator STERLE**—That will not help the rural farming communities that are relying on your product now.

**Dr Humphreys**—Nor is it a significant percentage of the diesel usage.

**Senator STERLE**—Yes.

**Dr Humphreys**—I would also like to make a statement about what Senator Milne was saying. To my observation, the price of canola and most edible oils is like this over the years, right? Surely the onset of an industry offers a new paradigm, a completely new market for the uptake, will have the effect of ironing out those dips. Is that not also a major consideration, that you are no longer relying on traditional paths that give you these huge peaks and troughs. I am sure that Senator Heffernan and a lot of farmers would relish the opportunity to iron out those peaks and troughs and have more of a steady, certain income. Biofuels and biodiesel brings those opportunities.

**Senator NASH**—I have a tiny question, I promise you. I want to focus particularly on this farm use aspect and a couple of things I want your thoughts on, rather than questions. One would be that given that you are not currently supplying—or very little—biodiesel for off-road, on-farm use, then the changes do not mean a revenue loss to Treasury, given they are not currently getting that excise back. It is only their future projections of what they might not earn if they leave the current provisions in place.

**Dr Humphreys**—Yes. What Treasury is blind to is that if they encourage the industry, one day they might have to forego a revenue of excise for a period to get the industry going. Even during that period, an industry will make a profit and be taxed on that profit, so Treasury will get an income.

**Senator NASH**—That is a very good point to make. The other thing that I would like your thoughts on: it would seem to me that as a farmer having an option of biodiesel at a cheaper price and obviously a clean green fuel, it would seem to be very sensible if the tax treatment for diesel, in terms of claiming back that excise, that 38.142, should be exactly the same for biodiesel.

**Dr Humphreys**—We are with you.

**Senator NASH**—Thank you.

**Mr Lake**—Under the bill, what happens is the producer grant is considered by Treasury as an offset to excise, not as a grant for production of biodiesel. That is a very specific and important point.

**CHAIR**—Can you say that again? This is really important.

**Mr Lake**—Okay. This is the crux of our submission.

**CHAIR**—Which you just tabled?

**Mr Lake**—No, not in relation to this particular hearing. It is in relation to the excise application. The stimulus package or group of packages created a whole range of supports for the energy grants credit scheme, producer grant offsetting excise, all the rest. We understand the intent of Treasury to simplify the tax system and therefore not create any new bills but keep what they call revenue neutrality across the platform of fuels and excise. In doing so, they wipe out all the effects of the benefits which have been provided to biodiesel. To maintain the position that we currently have, the definition of the producer grant, rather than being an offset to excise, if it is considered as a grant for the production of biodiesel to stimulate the industry—

**Dr Humphreys**—Which it is doing today.

**Mr Lake**—which is the net effect of what it is doing, then the status quo is maintained and we have a position where there is a sunset clause and a fadeout period; the sunset clause being the 2015 deadline and the phaseout period being the five years prior to that, and a final excise rate of 19c a litre. So we know where we stand. We know how we can position ourselves and remain competitive in the market. The part of proving the total growth and how we can stimulate rural and regional Australia is much harder to answer because we have only been a start-up industry and it is only in the last six months that we have really been taken seriously by the various DPIs and also the Oilseeds Federation and GRDC.

**Dr Humphreys**—Last year, as I said to you, we hired individuals and invested a lot of money to see what interest farmers had so we could develop an infrastructure to deliver smaller quantities.

**Senator NASH**—I was there.

**Dr Humphreys**—Today we are set up for larger quantities. We have massive interest. This coming summer we were prepared to invest in that infrastructure to deliver it. Now it has gone.

**CHAIR**—Until this issue is resolved.

**Dr Humphreys**—Yes.

**CHAIR**—Is the scenario that you just talked about with B49 the same with B5 through to B49?

**Dr Humphreys**—Yes, it is.

**CHAIR**—So anything up to B49?

**Mr Lake**—The net effect of that change which I just outlined means that it would also have the effect of opening up even B100 markets for the marine applications, where there are major environmental benefits because of the low toxicity of the biodiesel and the improved emissions profile. It would stimulate a very strong environmental improvement from the application of biodiesel, which currently does not exist.

**Dr Humphreys**—If the *Exxon Valdez* had biodiesel instead of fossil diesel, the only thing that would have happened when it crashed against the rocks is that the fish would have got fatter.

**Mr Mapstone**—We have also had inquiries for supply of biodiesel to ships for use in their gensets. You can take it one step further and look at all the resort applications in Far North Queensland—the Great Barrier Reef—where they have power generation by diesel being supplied by biodiesel.

**Mr Lake**—Parks Victoria have inquired about running the entire Wilsons Promontory on biodiesel. Telstra have 65 per cent of their generators running in national parks or protected lands and water catchment areas.

**CHAIR**—We've got the picture on that one! You are getting no argument. Senator Milne?

**Senator MILNE**—What sort of research is going on into capturing carbon dioxide from coal-fired power stations and the like and developing the algae industry to go into biodiesel and then biomass as well? Is that still very experimental in Australia? Where are we at?

**Mr Lake**—It is extremely experimental at this point. New South Wales has a fantastic opportunity, in that we have a lot of—

**Senator MILNE**—Carbon dioxide.

**Mr Lake**—carbon dioxide being emitted by coal-fired power stations sitting right beside large water bodies. The biggest hassle with even establishing a trial is that I do not think too many people at Lake Macquarie would like it turned into giant algae ponds. There is a fair amount of research, which will take considerable time and money, to—

**Dr Humphreys**—It is highly prospective.

**Mr Lake**—Yes.

**Dr Humphreys**—We have funded research into taking $CO_2$ emissions, putting them through a particular variety of algae, irradiating them with UV and they grow very well. Then they produce a great oil-bearing algae or a little bug. There is some great prospective research going into that, but it is still research.

**Mr Lake**—It is something that does hold potential and is much better than the conventional sequestration of pumping it back down the coalmines.

**Senator MILNE**—Exactly. I am thinking in terms of another biodiesel source solving one environmental problem—

**Dr Humphreys**—There is a lot of research going on at the moment into algae as a form of oil for biodiesel.

**Mr Lake**—National Renewable Energy Laboratory—NREL—which is part of DOE in America, ran a research program on that for about eight years. They closed the program off

simply because the Mid West froze too often. Australia does not have that problem. We have the expanses of saline water required for—

**Senator JOYCE**—Except a town called Woolbrook, which on every weather map gets down to about minus 10!

**Mr Lake**—Yes, it does get a bit cool. It is an opportunity which Australia can explore, but it is highly speculative and is far more in its infant stages of research than biodiesel is. You are correct, it is an opportunity which we should explore.

**CHAIR**—Thank you very much. We report on 19 October. If you have further information beyond what you have already said you will forward to us, please feel free to send it.

**Dr Humphreys**—Thank you.

**Mr Lake**—Thank you very much.

**Proceedings suspended from 12.59 pm to 1.52 pm**

**NEILSEN, Mr Warring John, Chairman, Government Relations, LPG Australia**

**NORTH, Mr Raymond, General Manager, Australian Liquefied Petroleum Gas Association Ltd**

**CHAIR**—Thank you and welcome to LPG Australia, Mr North and Mr Neilsen. You already know what the terms of reference are, so I will not repeat those. We are due to report on 19 October, which was extended from June. These are public proceedings, although the committee may agree to hear evidence in camera if you so request. All witnesses giving evidence to the committee are protected by parliamentary privilege. It is unlawful to threaten or disadvantage a witness on account of evidence given to a committee and such action may be treated as contempt by the Senate. It is also a contempt to give false or misleading evidence to a committee. If you object to answering a question, you should state your grounds for objection and the committee will decide whether we want to insist on your answering the question. If we do, you have then the right to request to be able to give that evidence in camera. I would like to invite you to make an opening statement, then we will grill you.

**Mr North**—I would like to make a few opening remarks, followed up by some brief detailed remarks from Warring Neilsen, who chairs our government relations committee as well as being a member of the management staff of Elgas Ltd, one of the major players in the LPG industry. We appreciate the opportunity to appear before the committee. LPG is a well-resourced and well-known alternative fuel. It has been around for quite a long while. Approximately two-thirds of LPG usage in Australia is as an automotive fuel, a transport fuel. The other one-third is in what we term the traditional market, which is home heating, hot water et cetera.

LPG in Australia is forecast to be in a state where there will be an exportable surplus for at least the next 20 years. As increasingly large numbers of wet gas wells are opened up or discovered, LPG production will increase. The forecast is that the proportion of LPG which is now coming from oil refining will drop but the naturally occurring LPG will continue to increase.

The government has recognised the benefits that flow from LPG in terms of its having been excise free as a fuel for many years. There will be an introduction of a 2.5c excise per year for each of five years, capped at 12.5c excise from 2011. That is discounted in terms of the energy content of LPG by 50 per cent, recognising the economic benefits and the clean air benefits and other benefits which LPG brings to Australia.

We have been quite active in the industry in promoting LPG, particularly as a transport fuel. With the recent rise in oil prices, there has been increasing adoption of LPG in fleet vehicles and private vehicles. Government fleet vehicles, not so much at federal level but at state level, are an important market, South Australia in particular. That is being fuelled by the fact that when these LPG cars now go in for auction at the end of their terms—say two years or 40,000 kilometres—they are getting $3,000 to $4,000 more per vehicle than they get for a petrol vehicle.

That is just a thumbnail sketch. We have put other material in our submission which you have no doubt read; and I will hand over to Warring.

**Mr Neilsen**—I would like to recap on some very key points. The sudden interest in alternative fuels has been brought to attention due to our concern over oil supply and the high cost of petrol and diesel in the marketplace. When you look at Australia's position, we are very rich in alternative fuels, specially in LPG. Eighty per cent of our production comes from naturally occurring sources. We have a 50 per cent export of about 1.5 million tonnes. That will tend to grow. We have a network in Australia for delivery of that alternative fuel to the marketplace. We have about a 52 per cent coverage of sites where people can get LPG.

While we look at alternative fuels in the future, such as hydrogen—we have seen the hybrid emerging—the thing that frustrates us more is that here we have a fuel already established and we do not make enough use of it.

**Senator HEFFERNAN**—I am with you.

**Mr Neilsen**—It is very frustrating for our industry to see that. A lot can be achieved very quickly, making use of that asset. That is what we really want to bring forward.

**Senator HEFFERNAN**—That is one of the great mysteries of life to me, why we have it all here and we are trucking LNG away at 5c a litre. What do we sell it for to Japan and China and other places, if that is not commercial in confidence; somewhere near it?

**Mr Neilsen**—All I can tell you is that LPG is now globally traded, so the product we sell out of Australia is sold on the world market price, hence our prices here for domestic supply fluctuate depending on the global demand and price set.

**Senator HEFFERNAN**—So there is price parity with the global market?

**Mr Neilsen**—Yes.

**Senator HEFFERNAN**—I know of some people who want to do a study into what would happen if we converted to a higher level of consumption. What would be the estimated reserves of our LPG in natural geography with whatever amount of use? They say we have 600 years of brown coal or whatever. How much LPG do we have?

**Mr Neilsen**—I think the figures say we go out to about 50 years. The significance and the strength of LPG is that, as we drive LNG production, which is what we are doing, then we are producing LPG at the same time. We are probably able to service about 10 per cent of the car park for petrol vehicles in Australia, so that is about 1.1 million vehicles. We are currently sitting at around 500,000. The thing is to make sure that we decide just how we want to mix the fuel strategy for our car park and how to get the best benefit of our own additional strength. That is the challenge: how to get there.

**Senator STERLE**—It took about 50 years, but this is why it is imperative that projects such as the Gorgon project—I am led to believe there is about a 200-year life in that project. Are you aware of that?

**Mr North**—I have heard that figure, yes.

**Senator STERLE**—That is including exporting it and for our own consumption?

**Mr North**—Yes. Even developments such as the Papua New Guinea pipeline and the developments in the area around Timor will produce LPG as well. It is conceivable that that would be available for domestic consumption as well as for export. At the moment, geographically a lot of the LPG, that is exported, as mentioned, goes off the North West Shelf because at the moment it is not economical to bring it round to the bottom south-east part of Australia, but that could change.

**Senator STERLE**—We are building another pipeline, aren't we, to bring it down for our own consumption?

**Mr North**—Yes.

**Senator MILNE**—This is an issue that I want to pursue, this whole area of Australian energy security and the export of LPG overseas. It seems to me from your submission that what you are saying is that you support a free market and a global price and that you will sell into that market on price, regardless of whether it is Australian domestic or an overseas market. You say elsewhere that that could easily, in the case of an energy security crisis, be changed. Does that mean easily changed at a price, so that providing Australia pays the global price, you would be prepared to prefer domestic markets? Is that what you are saying?

**Mr North**—The exporters could probably answer that better than we can but my guess would be, to take that scenario that you have painted, that that would be supplied at the prevailing prices. I do not think there would be a difference in the price structure. We participated in government reviews of energy security, and that question has arisen. Australia, as a supplier into the world LPG market, is pretty small compared to, say, the Gulf of Mexico, Algeria, the North Sea and whatever. I do not think that the diversion of one million tonnes, for instance—it is roughly one and a half million tonnes that we are talking about—into the Australian market would affect the price. What do you think, Warring?

**Mr Neilsen**—I think that issue was raised during the inquiry into the Liquid Fuel Emergency Act. There are commercial mechanisms that allow you to reserve product for your own local use. I am not sure, but I do not think there would be a great commercial impact if that happened. You usually find that the contracts already exist from those producers in Australia anyway, and there would be a call on that.

**Senator MILNE**—There has been talk in some of the submissions that we may have to get to the point of stopping overseas exports. From your submission, that is obviously not something that you would be supportive of.

**Mr Neilsen**—No. I think that is a very long-term outlook, if it were ever necessary. The practicality of developing the market and moving more people into LPG vehicles certainly would still remain and you would have an export surplus.

**Senator MILNE**—When you look at it from a Northern Hemisphere perspective and you see the energy security issues coming onto the front foot, Britain for a start is regretting the policies they have had previously in terms of exports, as now everybody is vulnerable to Russian supply.

They never would have envisaged a situation where they would be suddenly finding themselves on the end of whatever the whims of the Russians might be. There are nationalised fuel supplies in Russia and in Venezuela now. There is a shift. Eighty per cent of the world's oil is controlled by countries, not companies. Aren't you concerned about shifts of that kind in terms of Australia's energy security and where that might leave us in terms of vulnerability?

**Mr Neilsen**—From our own organisation's point of view, and personally, I think that that is really a question that policies should be addressing. I think that is where that sits. We are a very lucky country. We are very rich in our own natural resources and we have very good relationships with our neighbours. It is a matter of how you set out your strategy to handle that, because things change very quickly.

**Senator MILNE**—I do not understand the difference in relation to this, but we are going to hear later this afternoon from Natural Gas Vehicles Group. You are pushing for LPG. What is the advantage of LPG over natural gas as a transport fuel? What are the advantages and disadvantages of natural gas versus LPG to drive a vehicle fleet?

**Mr North**—LPG has the advantage that it is more easily compressed than natural gas, so you do not have to have the very big, heavy tanks to cart it around. For instance, the buses in Sydney that are on natural gas go out in the morning and have to come back again in the afternoon, because the mileage that they do means they have to be refuelled each evening. LPG is more portable. It is propane and butane, which is C3H8-C4H10, and natural gas is largely methane, which is CH4. So LPG is slightly more complex and uses a bit more energy.

**Mr Neilsen**—If you are comparing LPG with natural gas for motor vehicles, I think they both do a very good job. Each has its own individual strengths. The biggest strength that LPG has in Australia is its network of filling sites. If you had a similar network for natural gas, it could do a good job as well.

**Senator MILNE**—Why couldn't you adapt the natural gas supply to your house to fill your car?

**Mr Neilsen**—I think they have already done that. That technology is there.

**Senator MILNE**—In terms of the embedded energy in the volumes—what you said about the buses—the advantage of LPG is that it is physically lighter and you can go further and so on, but in terms of just running a domestic vehicle, if you had gas coming past your house because of the reticulation network, can you run a car with reasonable efficiency by plugging it into your natural gas?

**Mr Neilsen**—Absolutely.

**Senator MILNE**—Similar to LPG?

**Mr Neilsen**—Absolutely.

**Senator HEFFERNAN**—Senator Milne, were you overseas when we took this evidence in Canberra?

**Senator MILNE**—No, I listened to that, but I wanted to hear from the LPG people as to whether that is their view as well.

**Mr Neilsen**—I think all those things are being done and it is just a matter of getting people to convert their vehicles, putting a refuelling network in and having the product available. One of the constraints that we have in the LPG market for autogas is having the vehicle manufacturers produce sufficient variance of models. The whole market is dependent on demand. If demand pressures the motor vehicle manufacturer enough, then he will eventually put the vehicle product on the market, which is what they are doing right now. With the pressure on petrol pricing, the market—the private owner et cetera—is clamouring to buy LPG vehicles. We have seen Ford's sales lift by about 30 per cent. In relation to private motorists, there is about a 50 per cent increase in those looking at LPG vehicles. It is very price related.

**Senator HEFFERNAN**—Is the price of LPG what the market will bear?

**Mr Neilsen**—No.

**Senator HEFFERNAN**—As the fuel price has gone up, you haven't put yours up?

**Mr Neilsen**—Our price follows the normal crude global pricing.

**Senator HEFFERNAN**—This is getting close to what the market will bear, this answer.

**Senator STERLE**—Why does it follow?

**Mr Neilsen**—Because the pressure on LPG as a commodity—because it trades separately as a commodity—is simply as feedstock demands. You will notice at the moment that natural gas feedstocks are very high. It is simply demand. Most of the petrochemical market can switch fuels. They can go to naptha, they can go to LPG, and that drives them.

**Senator HEFFERNAN**—Wouldn't you get a higher share of the market if you did not follow the fuel rises? Wouldn't it be fair to say that you would?

**Mr Neilsen**—If we could do that, it would be nice.

**Senator HEFFERNAN**—I realise that your ASIC obligation is to maximise the profit for your shareholders, but if you really wanted to get more market share you could just separate yourself a bit.

**Mr Neilsen**—The price that is on the forecourt that you see is very much set by world parity pricing. If you had a look at the pricing comparison between ULP and LPG, you would find that the margins have actually receded. In other words, there is less money being made by the retailer.

**Senator HEFFERNAN**—Do you represent the people that have the off Gippsland oil and gas field?

**Mr Neilsen**—No.

**Mr North**—All the major LPG suppliers, like Elgas, are members. BHP Billiton's petroleum gas division is a member. The oil companies are members. Santos is a member. Anyone who produces LPG or produces equipment for it or bottles it is a member of our association.

**Senator HEFFERNAN**—But do you represent the people that are bringing it onshore from the north-west?

**Mr North**—Woodside is a member, yes.

**Senator HEFFERNAN**—What about this mob down here? Who represents them?

**Mr North**—Bass Strait?

**Senator HEFFERNAN**—Yes.

**Mr North**—Exxon used to be a member, but they pulled out of the world LPG association and other similar associations worldwide. We hear that they are only interested in selling from the wellhead now and are not going 'downstream', as they call it.

**Senator HEFFERNAN**—Do you think that this is taking it to left field, because we have a serious environmental problem down there with the aquifer; with poor planning in 1969 and no recharge to the aquifer? I think that everybody should be putting in, including the company. Do you think that is one of the reasons they are not interested in talking to anyone?

**Mr North**—I do not know. I was not aware of what you have just mentioned, but I am not sure.

**Senator HEFFERNAN**—The aquifer that they take the oil and gas out of, and out of which they take water as well, is falling still at 1.2 metres a year.

**Mr North**—Is it?

**Senator HEFFERNAN**—The Gippsland farmers, to whom I have been talking this week, are saying, 'Well, when is someone going to come to terms with this?' Not only are we going to have major coastal subsidence—so do not buy a house along the coast there because it is going to fall into the sea—but no-one is prepared to step up to the plate. Every year these fellows have to keep making their bores deeper and deeper because of the environmental planning and that gas and oilfield.

**Senator MILNE**—Just to come back to getting a roll-out of LPG more so than it is now, what is the major constraint to you on getting a bigger share of the market?

**Mr North**—I guess the market was progressing until the announcement, after the fuel tax inquiry conducted by David Trebeck, that the government was looking to go to fuel tax neutrality on all fuels. So a lot of people misinterpreted that. They thought that LPG might get a 38.143c a litre excise on it but that did not happen. Through negotiations with the government, and the government's appreciation of the importance of the industry, the outcome was a satisfactory one.

Since then we have had to get back up out of the trough again with conversions. The major car manufacturers halted their plans for expansion of LPG vehicles, like the Ford Motor Company. They have changed now. They have just introduced three new ones. Mitsubishi and Toyota all have LPG options. So it has really been up to our members to do industry development work, which we have been doing now for 2½ years, and also capturing the imagination of the public in terms of the benefits and the economies that LPG can offer as a transport fuel.

**Senator MILNE**—So that signal coming from the government did serious damage to your industry?

**Mr North**—It destroyed a lot of confidence.

**Senator MILNE**—Yes.

**Mr North**—We were continually answering questions in the media about what was going to happen. The actual level of excise itself had not been announced. It is the normal process of discussion, I suppose, that the government goes through.

**Senator HEFFERNAN**—But is it a signal from the government, or an interpretation of what the government—

**Mr North**—I think it was more an interpretation, Senator, than a signal. People will believe what they want to believe sometimes.

**Senator MILNE**—Either way, you are saying we are through that; there is an uptake now and the manufacturers are rolling out the vehicles and it is all progressing?

**Mr North**—Yes.

**Mr Neilsen**—I will just add a few words, if I may. The vehicle manufacturing sector probably has about a five-year planning outlook, so it is very important that the policy is in place and it is firm and consistent so they feel confident in the amount of investment. You are looking at a manufacturer today trying to compete. It is very expensive to make small niche products, so if they are going to put that investment in place they really need to know that it is going to continue to be supported.

**Senator HEFFERNAN**—Is there much of an incentive for the consumer?

**Mr Neilsen**—Yes. At the moment at 30,000 kilometres, if you are buying a Falcon you pay it back in one year.

**Senator STERLE**—On what kilometres?

**Mr Neilsen**—Thirty thousand kilometres. I think Ford charge around about $1,400 premium on that. So the key points in our business are the cost of conversion, the differential in the fuel price and the kilometres you travel. People say we should compete evenly with other fuels. You have to take an ordinary car that is designed for either petrol or diesel, and you have to transfer that into another fuel. If you are buying a car already manufactured on the floor of the

manufacturers and it comes out looking no different to any other vehicle—no tank in the boot, you cannot see anything—then the uptake would be significantly higher.

**Senator MILNE**—I have a 100 per cent LPG car.

**Senator STERLE**—I want to bring your attention, if I can, to page 2 of your submission. You were talking about the economic costs in terms of there being no economic costs to GDP and there is not a break-even production cost which cannot be met without government subsidy. Can you clarify that statement for me, please?

**Mr North**—I think what the submission was trying to say there was—we do not like to think of it like this—LPG is a by-product of other activities so you do not have a payback or a break even cost with it. The oil refiners do not have large storage so it is a product that needs to be sold. As Warring mentioned, with feedstock, often oil refiners are next to processing plants for plastics and polymer production. In the case of the North West Shelf or Bass Strait, the light fractions, which is what LPG is, are coming out of Bass Strait at Longford. They go along to Long Island Point near Hastings and there is an LPG pipeline into Dandenong, and an oil pipeline. So it is fractionated out at Long Island Point. That part of the fractionation plant has an overhead burden associated with LPG, but normally you do not need to make a large investment that is LPG-specific if you are producing more. I think that is what they are getting at there. That is probably the input of an economist, I think, and I am not one.

**Senator STERLE**—I can concur with you because I was on the North West Shelf not long ago and I have seen exactly what it is all about with the new train being built. But when I look at the price of the share of Woodside and then compare it with a carton of Crownies it is hard. What are you going to do on a Friday night: buy a share or buy a carton of beer?

**Mr North**—That is right.

**Senator STERLE**—So I appreciate that, but I struggled with the statement. Is there a world market? You said there was a world pricing market.

**Mr North**—Yes, there is.

**Senator STERLE**—So it is not regional?

**Mr North**—No. You have heard of the way the oil prices are. There is a Gulf price and a Brent crude. There are similar pricing areas, depending on where they supply LPG. In East Texas it is Mont Belvieu. I forget the name of the place in Algeria. There is the Brent, North Sea price and there is the Saudi Aramco price. They are the biggest exporters into North Asia and India where we export, so that tends to determine our price. On the first of each month the Saudis announce their contract price. They call for tenders for the supply of their product. At the moment that is $A616 a tonne. That was what was announced on 1 June. I do not know what it will be on 1 July.

**Senator STERLE**—What is that per litre?

**Mr North**—About 30c a litre. So you have to add, say, 4c a litre transport onto that. That is a rough thing. Warring and I were talking outside. As you have obviously analysed yourself, you relate it to the price of autogas.

**Senator JOYCE**—Thirty cents a litre for—

**Mr North**—That is the FOB price before it gets shipped at a Saudi Gulf port.

**Senator JOYCE**—For oil?

**Mr North**—For LPG. LPG can vary too. It can be pure propane or it can be a mixture in some markets of propane and butane. Sometimes it can be pure butane, can't it?

**Mr Neilsen**—Yes.

**Mr North**—It is two gases.

**Senator HEFFERNAN**—So it is not the Shell station in north Junee after all that determines the price?

**Mr North**—That is an interesting comment because your depot, or whatever it is, there in Junee may well put propane in to sell to farmers and householders and it might be propane in the service stations because they do not do a split load. But in the city, near the oil refineries, the autogas might be a mixture of propane and butane, or it could be pure propane, could it not?

**Mr Neilsen**—Yes.

**Mr North**—It will not be pure butane because that does not meet the fuel standard for LPG. I cannot explain why because I am not a technical bloke. But if you put too much butane in it affects the vapour pressure and all sorts of other things.

**Senator JOYCE**—Just an aside. Whereabouts is the pipeline from Papua New Guinea?

**Mr Neilsen**—You mean the progress of it?

**Senator JOYCE**—Yes, the progress of it.

**Mr Neilsen**—Probably AGL would be best suited for that. But as I understand it, a lot of the issues over land access and that have been resolved. I think at the moment there is some finalisation of the shareholding in that arrangement; it is not too far away from getting going. It is probably five or six years off before it will happen.

**Senator JOYCE**—The price of transporting that far by pipe—from what you know, and I know it is not your field of expertise—the overheads of that capital infrastructure will still make the price of the gas affordable?

**Mr Neilsen**—Absolutely.

**Senator JOYCE**—Do you see yourself as threatened by any biorenewable fuel alternatives, or is it not really a concern of yours? You will run your race and they will run theirs?

**Mr Neilsen**—The thing that is important is to have an alternative fuel market. Each of your alternative fuels will play a specific role and have a niche in that market. It is important that each of them will find their own level, where they sit. It seems to me that we need an alternative fuel policy and a strategy of how you want that to play out. That is really what it is. We know our product, LPG, is already there and can move very quickly to take up an even greater amount of replacement of petrol; so a lot of $CO_2$ gains to be made very quickly.

**Senator JOYCE**—You may have already touched on this, but is there a reason why it has not been more widely used in manufacturing, why we are not getting wider turnout of cars that are manufactured to use just LPG rather than always having to do converter kits?

**Mr Neilsen**—There are two things. One reason is that, when we first had the excise debate, it was right when the manufacturers were planning, so that curtailed them moving on with models. Now, when we have some confidence in where LPG is going with the announcement of the excise arrangements, the vehicle manufacturers have moved on that. We are now getting the latest technology coming out from Holden, Ford and Mitsubishi. Provided policy stays strong and there is some leadership from government saying, 'We want alternative fuels out there,' and provided the vehicle manufacturers are getting the demand and confidence, they will do it. They have to make the investment. There is a big investment in technology.

**Senator JOYCE**—In the LPG market in Australia what proportion of the market is owned by what players as market share, from the major oil companies, the independents, to external people?

**Mr Neilsen**—We know the grocery market, looking at the Woolworths and Coles networks, probably has 50 per cent to 60 per cent of the fuel market.

**Senator JOYCE**—Fifty per cent to 60 per cent is Coles and Woolworths?

**Mr Neilsen**—Yes, those two networks would have that amount. That is putting a lot of pressure on the independent networks.

**Senator JOYCE**—You sell through the supermarkets? LPG gets out through the supermarkets?

**Mr Neilsen**—Correct. Woolworths and Caltex, and Coles, mostly have LPG on their sites.

**Senator JOYCE**—That is the retail side. I understand that Coles and Woolworths have 50 per cent to 60 per cent of the market. That is why they are insidious. But the actual supplier of the retail market, what portion of the market is held by what players? Do you have a rough idea?

**Mr North**—On the supply side?

**Senator JOYCE**—Yes, supplying the retailers.

**Mr North**—That would be pretty difficult to answer. The major suppliers are those companies we mentioned before: Exxon, BHP, Santos and the oil refiners.

**Mr Neilsen**—They would be the three.

**Mr North**—Kleenheat Wesfarmers bring product down to Kwinana in that big pipeline over there. They would be a significant supplier, I would imagine.

**Mr Neilsen**—Exxon and BHP would be the two significant suppliers.

**Senator JOYCE**—Thank you very much for that.

**Senator MILNE**—One of the major disincentives for people taking up the 100 per cent LPG vehicles in Tasmania is the inability to access the fuel outside the city areas. There is a very poor network. A couple of municipal councils on the east coast of Tasmania, for example, have said they would be interested in converting their fleet but there is no point because the nearest service station is 80 kilometres to 100 kilometres away from where you can actually access it. That is the first issue: whilst LPG may be a solution currently in built-up areas, for rural Australia it is hard to make the conversion. How can we deal with that?

The second thing is that in terms of greenhouse gas emissions, what percentage of the national fleet is now LPG and, if we were to make a rapid conversion of the whole national car fleet from where we are, what sort of impact would that have on greenhouse gases? What percentages are we talking?

**Mr Neilsen**—We know that of the current car park, which is around 550,000 vehicles, 50 per cent is private; so 50 per cent is commercial fleet. We say we get up to about a 20 per cent $CO_2$ saving. That is a *World of Wheels* calculation. It is a matter of then doing the numbers as to how many vehicles on the fleet. You are making a 20 per cent improvement over the whole car fleet. Then you work out what period you want to do that in.

**Senator MILNE**—In other words, if there were a policy to rapidly convert to a more $CO_2$ friendly future, we could do it and make a significant advance in the transport sector by driving a policy into this LPG.

**Mr Neilsen**—Yes, I think that is right. It is like anything else. If you set a goal, and people know what the goal is, then people can meet that goal and respond to it. That is what drives the whole debate. The consumer works on price. It is definitely a price thing in our market.

**Senator MILNE**—What about the issue of rural and regional access to LPG?

**Mr Neilsen**—On the mainland here we have coverage in almost every place. There would be very few—as I was saying, over 50 per cent of our sites in Australia would have gas.

**CHAIR**—I used to have an LPG car, a private vehicle. I travelled around Australia in it. The last trip we did, we did not go anywhere where we could not get gas.

**Senator MILNE**—You did not come to Tasmania, did you?

**CHAIR**—We did take it to Tasmania but we could not find it in outback Tasmania.

**Senator MILNE**—Thank you. I had not realised that it was not the same in other rural and regional places.

**Mr North**—It has been an issue in other states. Recently in western Queensland I was asked how many LPG outlets there were west of the Great Divide? I did not realise one town I put in was on the Queensland-Northern Territory border.

**Senator JOYCE**—Camooweal.

**Mr North**—Yes, so it was close enough; but there were 57 outlets west of the Great Divide in Queensland.

**Senator JOYCE**—We have it in St George.

**Mr North**—Yes.

**Senator MILNE**—That is interesting.

**Mr North**—I am aware of Tasmania's situation. We have had discussion with people in the Tasmanian industry and that is a problem.

**Senator MILNE**—It is a major problem.

**Senator HEFFERNAN**—Yes, they are different down there.

**Senator MILNE**—More progressive usually.

**Mr North**—It is the population density, I think.

**Senator JOYCE**—You would be aware of a market tolerance between the price of fuel and the price of LPG. What do you think it is? Is it that if LPG is half the price of fuel, then LPG grows? Have you done any study of that? Obviously, if LPG was the same price as fuel there would be no growth in the market.

**Mr North**—In a six-cylinder car, you use about 30 per cent more litres of LPG than you use petrol to travel the same distance. I am answering this from a personal point of view because I drive a dual-fuel car. I reckon if the differential is not around 70c, if it gets below that, below 50c, it is not looking too good. What do you think, Warring?

**Mr Neilsen**—I think the price thing is a very interesting one. The reason I say that is that I have watched the petrol pricing. Once upon a time, when we got to 90c per litre for petrol there was an uproar. Then we get to $1 and there is an uproar. People become price conditioned. We have noticed, with the increase in conversions for the private motorist, that once it reaches that figure of around $1.30 or $1.40, they are out there wanting to convert straightaway. They do not even look at the differential. It is that signal that goes on. They do not do their sums.

**Senator HEFFERNAN**—We want to do the sums. If you moved the price as a percentage with the price of fuel, is there still the same percentage?

**Mr Neilsen**—No, not quite. Our base figure is around 50 per cent differential.

**Senator HEFFERNAN**—Near enough to 50 per cent; just moving with the price?

**Mr Neilsen**—Yes. The greater the differential, the quicker the payback period. That is what makes it very attractive.

**CHAIR**—Thank you very much. As I said, we are reporting on 19 October. If you have any further information, feel free to send it in.

[2.38 pm]

**SCHUCK, Dr Stephen Michael, Manager, Bioenergy Australia**

**CHAIR**—Welcome. You already know the terms of reference of the inquiry, so I will not repeat them. We will be reporting on 19 October. These proceedings are public, although the committee may agree to a request to hear evidence in camera and may determine that certain evidence should be held in camera. I remind you that the hearings before the committee are covered by parliamentary privilege.

It is unlawful for anyone to threaten or disadvantage a witness on account of evidence given to a committee and such action may be treated by the Senate as contempt. It is also a contempt to give false or misleading evidence to a committee. If you object to answering a question, you should state the grounds on which your objection is based and the committee will determine if we will insist on an answer and then you may request that it be given in camera. Welcome, and I invite you to make an opening statement.

**Dr Schuck**—Bioenergy Australia is a government industry forum. It was set up originally by the former Energy Research and Development Corporation in 1997 and has subsequently grown into something with just over 50 members. It acts as an information forum, so it is not an industry association as such. It keeps away from the lobbying side and tries to act more like a source of authoritative information. Much of this is done through participation in the International Energy Agency's Bioenergy program, in which Bioenergy Australia participates in five different tasks.

Could I also say that some of my views may not necessarily represent some of our members, particularly the government organisations. What I would like to do if I could, with your permission, is to show you a very quick PowerPoint presentation to reinforce what is in the presentation.

*A PowerPoint presentation was then made—*

**Dr Schuck**—Just as an introduction, let me show the carbon dioxide neutrality of bioenergy. Essentially the process is one of using photosynthesis to produce biomass, so one can think of bioenergy as a form of solar energy: combining atmospheric carbon dioxide with sunlight. If managed on a sustainable basis, it is totally renewable. It is fairly simplistic, but this is how bioenergy is recognised under the Kyoto protocol.

There is a great variety of forms of bioenergy. There is a whole variety of feedstocks from fairly wet to fairly dry, such as rice husks at the one end, which may be very dry, to let us say sewage streams, which may be fairly wet. There are a whole range of mixing and matching technologies which can be categorised as thermal processing biochemical or mechanical means. As you can see, you can produce a whole range of products from bioenergy, including heat and power. The bit that I would like to concentrate on is the chemical feedstock. That includes fuels, for instance things like ethanol from biochemical production, and things like biodiesel from

more mechanical and fairly rudimentary chemical processing. There are a whole range of alternatives for arriving at transportation fuels.

The other thing that I mentioned in the submission is what Sweden is doing in bioenergy. Last week I returned from the World Bioenergy Conference in Sweden, where the Swedish Prime Minister opened the conference. He basically said it was not the new technologies that he fears, but the old ones. This is a BioPower Saab. These are fairly common. It is totally fuel flexible from full petrol to E85—85 per cent ethanol—using onboard sensors to tell what is in the tank. So you can fill up at any stage with different blends. These are fairly common and a lot are now being exported to countries such as Brazil.

In the submission I tried to expand perhaps some of the thinking and discussion beyond the so-called first generation biofuels. The first generation biofuels are essentially ethanol from fermentation of things like sugar and starch waste and so on and also biodiesel using oilseed crops for transesterification to produce fuel with the right standard.

Things are moving beyond that. One of the areas which I have not shown there on that diagram is, for instance, cellulosic biomass. Instead of just using a part of the actual crop, or the standing biomass, to try to use just about all of it. The prospects there are that you can get much greater yields and therefore reduce the cost. So that has been quite a big direction internationally—and as part of President Bush's State of the Union Address about a month or two back—where the US is trying to put greater emphasis onto cellulosic biomass to ethanol conversion. But in addition to that, there is a similar kind of philosophy of using the entire biomass for the production of fuels and also chemicals.

Some of the direction has been in terms of trying to gasify the biomass—in other words, to break it into its constituent chemicals, particularly carbon monoxide and hydrogen—and then synthesise a range of fuels such as methanol but also something called dimethyl ether which is very similar in physical and handling properties to LPG. I will go into that in a second as well.

The so-called Fischer-Tropsch fuels: South Africa produces a lot of their oil from coal, using this kind of synthesis technology; again, tomorrow's fuel of hydrogen. This is just to illustrate—I think part of that was in the submission—from something called SYNBIOS which was a synthetic biomass fuels conference just over a year ago in Stockholm. That shows a truck that Volvo is trialling. It is quite interesting. This conference had Volkswagen, Renault, Volvo and others who have now started turning their attention to these alternative fuels. The top left diagram is the fuel storage. It has some of the limitations of things like LPG, of lower energy density; not quite what you get from petroleum but there is a trade-off. DME is a particularly clean burning fuel in that you do not have any carbon to carbon bonds in the fuel. So it is an extremely clean-burning fuel.

This is a simplified diagram of how these fuels are produced. The feedstocks can be coal, oil, natural gas and also biomass. I guess, the big distinction is that biomass would produce a carbon dioxide neutral fuel. As I described, it is a gasification of the biomass, cleaning the gas and then using the synthesis gas, which is essentially carbon monoxide and hydrogen and going through catalyst beds to produce these kinds of fuels.

This is an example. Choren is a German company involved in gasification. This version is a Fischer-Tropsch type fuel—a synthetic diesel—which would very much meet the standards similar to petroleum diesel, except coming from a renewable energy source. This shows that Volkswagen has trademarked the product SunDiesel and is trialling this kind of fuel.

The thing that particularly interests the Europeans—I am not quite sure if it is the same issue in Australia—is the amount of fuel you can produce per hectare of land. This was extracted from a presentation that was given by Volkswagen at the SYNBIOS conference. On the length of each of those trucks is a horizontal bar representing the amount of fuel. What that shows is there are quite impressive opportunities for using energy crops for producing these kinds of fuels. These are in terms of diesel or petrol equivalents.

The other one that I have just flagged in the submission, which I wanted to raise, was trying to expand the spectrum of biodiesel; particularly feedstocks. This is work that is going on at MIT in the US. But I am also aware that there is some behind the scenes development in Australia of using high-lipid content, or high-oil content algae for producing feedstocks. The advantages of this, and why they are going in this direction, are that you can get much higher yields per unit of land. This particular one is trying to link it to power stations; taking the flue gases rich in carbon dioxide and also oxides of nitrogen and feeding them through this reactor vessel. I have noted that I pulled this from a company, GreenFuel; they are calling commissions to biofuels. That is another thing I wanted to bring into the discussion.

Something I have not put into the submission which I was hoping to quickly go through is another area, pyrolysis bio-oil. It is possible to take biomass and to thermally fractionate it into a diesel substitute. This product has something like a 60 per cent energy content on a volume for volume basis of diesel. It is very similar to making charcoal. In charcoal you are left with a tarry substance. This is a research area that has been going on for about 20 years and is beginning to come to fruition. It is possible to convert about 75 per cent of the dry mass of the biomass—in other words, exclude the water component—into this bio-oil substance.

If you do it on a mass per mass basis—it is very heavy, this bio-oil—something like a specific gravity of 1.2 versus about 0.8 in that area for diesel and petrol. It is very acidic and it is quite a different kind of substance. You cannot mix it with petroleum diesel. One of the reasons for this is that, with bioenergy, one of the greatest limitations is the very low-energy density of things like woodchips. If you were to produce your biomass, let us say, in energy plantations, and were to chip it and transport it, you would probably only have an economic catchment area of perhaps a 100- or 200-kilometre radius. What this achieves is that you can densify your biomass to something like 60 per cent the energy content of diesel, and therefore be able to either put it in pipelines or tanker it and use very similar fuel handling systems to those existing.

There has been quite a bit of work done in terms of stationary energy for electricity for heat and power and, as just shown on there, also transportation fuels. Much smoked food is produced through this kind of process. It is dipped rather than smoked.

Just to show you where this is at, there is a plant in Ontario at the moment, in Canada, a company called Dynamotive; a hundred tonnes per day of biomass input. They are linked to a floorboard company. So they are using the waste wood to fuel the plant and then providing the heat back; some of the cogenerated power back into that particular plant. This leads into the

concepts of bio-refineries and having multiple product streams. This bio-oil has a number of values, things like value added chemicals—speciality chemicals—can be extracted from it. Also the opportunities are shown on there for either producing ethanol or hydrogen. So it is like a chemical intermediary.

The last thing in terms of one of the great benefits of bioenergy, both for heat and power but it also flows into transportation fuel, is the great rural and regional opportunities in terms of jobs. This is a report that came out of the European Union from Altener, their research program, showing job prospects in the European Union, leading up to 2020. As you can see, they are quite impressive in terms of the opportunities. Most biomass would be produced rurally. There could be some from municipal solid waste and so on, but the longer term prospects are basically growing solar energy. The projections are quite good for jobs.

I have visited France, for instance. It was not transportation fuel but a bioenergy plant for heat and power in Austria, and it was directly sited in an economically depressed area to stimulate the local economy. Studies I have seen have quite impressive economic multipliers beyond the direct jobs but also for the indirect jobs and the induced jobs.

In relation to the last slide, there was a study conducted in Australia, headed by the Rural Industries Research and Development Corporation but also involving the Australian Greenhouse Office, called *Biomass Energy Production in Australia*. I was involved as one of the authors. That goes beyond heat and power and covers some transportation fuels. I am very happy to provide this to the committee.

There was another report funded by the Joint Venture Agroforestry Program run out of RIRDC, which was called *Wood for Alcohol Fuels*. The research question that was asked was: is it worthwhile making very significant tree plantings in Australia, particularly for dryland salinity control, and having economic values beyond salinity and land care? The study looked into the future to 2015, when some of these cellulose to ethanol technologies are expected to become mature, and looked at projected costs to answer the question: does it make sense? It looked at methanol produced from gasification of biomass. It looked at ethanol and it also then did a check comparing it against electricity production. There are multiple copies of that, which I am happy to provide.

While I am bearing gifts, I have also brought along a copy of *Biofuels for Transport*, by the International Energy Agency. I do not know if the committee has had access to this particular report, but it is a pretty authoritative report coming out of IEA headquarters in Paris. It goes into exhaustive detail, looking at some of these alternatives that I have spoken about and also some of the projections, not concentrating on Australia obviously but where things may be headed. I mentioned IEA Bioenergy, in which Bioenergy Australia participates. I have the latest annual report. I only have one copy, but the rest is on the web.

**Senator HEFFERNAN**—After all that, what is the answer? Does it make sense—

**Dr Schuck**—Yes.

**Senator HEFFERNAN**—to make energy from planting trees, for instance?

**Dr Schuck**—I think it makes sense to explore and to develop future fuels. I do not think energy economy is going to rest on just one technology, but I see this as quite an important part of future energy mixes. As I also point out in the submission, the European Union has been quite forward in setting targets for biofuels, and a lot of it will be produced through this—

**Senator HEFFERNAN**—Have they set it on the likelihood there will be no oil or that oil will be too dear? Why have they set their target—

**Dr Schuck**—It is a combination. Europe is very much a balance between their Kyoto obligations and energy security. There is some concern about peak oil and things such as that but also, to meet the Kyoto protocol targets, the European Union has set this target of 5.75 per cent of fuels from renewable sources by 2010 and then moving on probably to about eight per cent by 2020. It is not the entire solution but there are huge developments. Sweden has an announced intention of ridding itself of oil dependency by 2020, and there is a very good chance that they will do it. They are not saying that they do not want to use oil. It is just the dependency aspect.

**Senator JOYCE**—In relation to the Swedes, the Saab BioPower model runs on ethanol, does it?

**Dr Schuck**—Yes, up to E85, so it is from 100 per cent petrol to 85 per cent ethanol and 15 per cent petrol.

**Senator JOYCE**—Could it be envisaged that—and you showed us a couple of examples—there will be vehicles that Australia will not be able to buy because we will not have the capacity to fuel them?

**Dr Schuck**—No, and the reason is because it is legislated that our cap is 10 per cent ethanol. There is no technical reason beyond that.

**CHAIR**—Senator Milne.

**Senator MILNE**—One of the things that keeps coming out of this is that we have had a fairly ad hoc approach in Australia to this whole issue of alternative fuels. It is whatever seems to be a good idea at the time, because it might address salinity and hence we might go with the tree plantations and therefore there might be a biofuel thing. Then we have ethanol. The sugar industry gets in trouble, so maybe ethanol is a good idea, and somebody else has a good idea for another reason. The trouble is that we do not have a strategic plan.

It seems to me, from what you have said, that Sweden has a strategic plan, some national targets and then the mix sorts itself out within that context. Europe has its targets, driven, as you say, by a concern about energy security and having an independent supply, plus its $CO_2$ emissions. In Australia, without a carbon limit and without any kinds of targets or limits in relation to either energy security or $CO_2$, to me, that seems to be the major constraint. There is no plan because we do not have any limits, any constraints. With the work that you are doing with Bioenergy Australia, how can you make judgments about what is reasonable and what is not reasonable in the absence of a price on carbon, in the absence of greenhouse gas emission limits and in the absence of an energy security strategy?

**Dr Schuck**—As I mentioned earlier, Bioenergy Australia acts as an information forum. We are not really trying to be proscriptive. We are leaving that to government and government members to pick that up. What we have been trying to do within Bioenergy Australia is open horizons, educate people and expose them to this information.

**Senator MILNE**—But the problem is that you can expose people to information but it is difficult for people to make judgments about what is a reasonable strategy. Wouldn't the next step be to develop some sort of alternative fuel strategy, looking at a number of scenarios?

**Dr Schuck**—Yes, I agree with you. There was a small mention of transportation fuels in the renewable action agenda which was facilitated by the industry portfolio, but a lot of that work got overtaken by the 350 million litres per year target by 2010.

**Senator MILNE**—That is what I meant about an ad hoc approach, where one thing is more fashionable than another at any one time. Whether or not that is the right way to go gets run over the top of. We have to make recommendations from this inquiry, and listening to all the different voices from the whole alternative fuels sector, what we are lacking is any kind of strategic overview. People say there need to be incentives. Others say, 'Well, we don't want to have to rely on subsidies et cetera. We need to be cost competitive with overseas,' and so on. We just had the LPG people saying we need an overall strategy for alternative fuels. Has it got to the point where what we need is a recommendation that we have three or four scenarios in which we can then plan for alternative fuels?

**Dr Schuck**—Yes, that would be useful.

**Senator MILNE**—That is what I thought.

**Senator HEFFERNAN**—Are you familiar with the tree business?

**Dr Schuck**—I am an electrical engineer by background but I know a little bit about trees.

**Senator HEFFERNAN**—I see you have a photo here in this excellent brochure of a road at Griffith, and I suppose the argument in this brochure is, 'We'll plant trees there and reduce the salinity that's breaking the road up.' Are you into it enough to be able to comment on that?

**Dr Schuck**—Yes.

**Senator HEFFERNAN**—That is only wetland salinity, caused by the rice paddies and irrigation in the area. It is local salinity, which relies on the water, and I am worried that if we drive an alternative fuel based on trees you have to look at what it is doing to Australia's water supply at the same time.

**Dr Schuck**—Yes, that is an important area. One of the areas that Bioenergy Australia got involved in through IEA Bioenergy was one task—of a number of tasks—that specifically looked at the sustainability issues for forestry. They would have included water. There are a whole range of issues.

**Senator HEFFERNAN**—The argument in this photo here, on page 13 of the *Wood for Alcohol Fuels* booklet, is, 'Example of road damage near Griffith caused by high watertables'. That is obviously the wetland salinity off the irrigation area. Would you be replacing rice crops with trees and be no further in front in terms of—

**Dr Schuck**—A lot of work needs to be done in terms of exactly how you plant trees. What we have been flagging is that that is perhaps for future work.

**Senator HEFFERNAN**—That is all I need.

**CHAIR**—The situation is different in WA. We have a completely different environment and we are trying to use up the watertable; drop it significantly.

**Dr Schuck**—Yes, and a lot of the emphasis in that report has been in the lower rainfall areas and particularly WA.

**Senator HEFFERNAN**—Yes, it would have been better if that had been a different photo.

**Senator MILNE**—One of the issues that you put up on the screen, I asked someone else about this morning: I am really interested in the capacity to capture carbon dioxide from coal-fired power stations and grow algae as an alternative fuel and biomass et cetera. We are spending a fortune in Australia on carbon capture and storage via the coal industry. Why do we not have a project as part of that carbon capture and storage to look at this instead of just pumping it down into holes in the ground?

**Dr Schuck**—I do not know.

**Senator MILNE**—Is this being discussed within the coal industry as an alternative to geosequestration?

**Dr Schuck**—We have managed to engage part of the power industry. We have been quite fortunate in having, for instance, Delta Electricity, Macquarie Generation, Stanwell Corporation, CS Energy, Tarong Energy and Western Power Corporation, involved in Bioenergy Australia. The bit that we have managed so far to get them involved in is co-firing biomass with coal. Just about the cheapest form of renewable energy for electricity is to introduce woodchips onto coal conveyors. That has been done and it has qualified under the mandatory renewable energy target. It also qualifies under the New South Wales NGAC Scheme. There has been more in terms of displacement of fossil fuel rather than actual growing of trees. Unfortunately, energy crops are relatively expensive. The cheapest form of bioenergy would be the use of wastes and residues. If you are going to try and transform an energy economy, there would be a requirement to go for energy crops.

**Senator MILNE**—I am asking about this issue of the algae. They are doing it in the United States. Are we not doing it anywhere here?

**Dr Schuck**—At an experimental level. I am vaguely aware—this is commercially in confidence and has not been disclosed to me; but I have heard—of two possible projects

involving power stations. They are just using flue gases for algae growth. RIRDC also funded a research project which characterised yields for a particular strain of algae.

**Senator MILNE**—What sort of $CO_2$ end result in the whole life cycle would there be if you continued coalmining, used coal-fired power stations but captured the $CO_2$ into this process? Do you have any idea?

**Dr Schuck**—I am not quite sure. It is really the bioenergy cycle that captures the carbon, so my interest has been more in terms of setting up bioenergy and then recycling that. It does have some fossil fuel usage through the transportation systems and possibly the use of fertilisers and embedded energy in the technology. I am aware of those kinds of numbers but I am not quite sure I fully understand the question.

**Senator JOYCE**—Obviously the connection between the production of biorenewable fuels and regional economies is a big issue for Australia. I had a look at what you were talking about, algae; but that is just going to add to the status quo of the major coal burners at the moment, isn't it? It is hardly something that a small community is going to be able to get strongly involved with.

**Dr Schuck**—Not necessarily. That particular example was using flue gases. It would be possible to set up stand-alone algae ponds as well, just fed off normal atmospheric carbon dioxide as opposed to enriched atmosphere.

**Senator JOYCE**—Is there a viable commercial perspective in which a community or participants within that community—whether they are farmers, community groups or farmers' cooperatives—can make money out of that process or is it beyond their capacity to be involved in it?

**Dr Schuck**—For algae, I do not believe sufficient work has been done but the report from RIRDC that I provided, that fairly thick one, looked at not algae but trees. The question was, should a farmer grow a plantation for lumber and then use the thinnings for bioenergy or grow a short-cycle tree crop specifically for energy? That was done for both a high-rainfall area of South East Queensland and for the Murray Darling basin. It turned out that the short-rotation energy crop was more prospective. There have been some studies done in that area but not specifically in algae.

**Senator JOYCE**—You have done very well to find a high-rainfall area in South East Queensland at the moment. You mentioned in this booklet, *Wood for Alcohol Fuels*:

> A large price gap generally exists between the cost of alcohol fuels from sugars, starches and biomass and the ex-refinery cost of petrol. Unless there is a large, and sustained, increase in the price of crude oil, alcohol fuels cannot be expected to compete "head to head" against petrol on a simple economic basis.

Currently the price at the terminal gate for ethanol is around 75c to 80c and for petrol around $1.40. There is about a 60c differential between them and we are still unable to get ethanol out in the market. Can you give an explanation as to what sort of government program you think can break down that mentality and that sort of hurdle that we are having to deal with?

**Dr Schuck**—It is probably a difficult one for me to answer from Bioenergy Australia's point of view, given the government involvement. It is happening to some extent through the likes of Shell. They are introducing E5 blend. It goes back to government measures in terms of policies and drivers. I can only really point to overseas countries where there has been quite a big take-off and there have been a whole range of measures in terms of subsidies and taxes on alternatives, on fossil fuels.

**Senator HEFFERNAN**—It is called maximising the profit for the shareholders.

**Senator JOYCE**—I agree. That is what they are doing: maximising the profit for the shareholders. Without a shadow of a doubt they are doing that. Do you have any comments whatsoever about the effectiveness of the current Australian fuel retailing mechanism to get biorenewable fuels out into the market? Do you think they are playing the ball? Are they a convenient vector to getting biorenewable fuels out into the market or are they being obstructionist?

**Dr Schuck**—I cannot really comment on that. I do not have knowledge in that area.

**Senator JOYCE**—There is now, especially in Europe, from what you are talking about, the Saab—what do they call that, the BioPower car—and the DME truck. Who makes that? Volvo I suppose?

**Dr Schuck**—Yes, the DME was being trialled by Volvo.

**Senator JOYCE**—Europe is obviously running right ahead in this game. Do you envisage that they will be producing vehicles that will not be suited to an Australian environment because we will not have the capacity to provide the fuel in the most economic form to fuel them? You will be able to buy a DME truck, but the only thing you are going to be able to run it on is petrol because there will not be the capacity throughout the Australian economy for there to be the mechanism, the vector, to fuel it up with biorenewable fuels.

**Dr Schuck**—It depends. For instance, the Saab BioPower can run here right now, because it can run on 100 per cent petrol. That is not a problem.

**Senator JOYCE**—There is not much advantage to that.

**Dr Schuck**—That is right. You would be wasting your money.

**Senator JOYCE**—Why would you buy it?

**Dr Schuck**—Yes, I agree on that one. In terms of these other fuels, like DME, they are more fuels for the future. It is unlikely, even in Europe, you would see it in before about 10 years.

**Senator JOYCE**—But it is envisaged. If the Saab BioPower is the way of the future, you will have, in Europe, the capacity to drive round using completely different vehicles to those you use here because there will not be the willingness in the Australian economy to actually provide those fuels. You can buy them but only to use them with petrol.

**Dr Schuck**—Yes.

**Senator HEFFERNAN**—Only if we fall asleep at the wheel.

**Senator JOYCE**—Do you have any views—I know this might be a bit hard—about the effectiveness of biorenewable fuels? Is there a rating, or just that graph you showed earlier on, as to what is the most effective mechanism of a biorenewable fuel? The one you had up there with whatever it was—you had ethanol, you had biodiesel, you also had DME.

**Dr Schuck**—I have here some figures that I just picked up. It came out of this document that I would like to hang on to, called *Fueling the Future*. I can send the panel a copy. It was from the business region of Gothenburg in Sweden. It has fuel types and for each of them it is in terms like greenhouse gas emissions. It is on a $CO_2$ equivalent basis in grams. It is greenhouse gas emissions per kilowatt hour on the shaft of each vehicle. These numbers are: for diesel crude oil, 732 grams $CO_2$; ethanol from wheat, 240; ethanol enzymatic wood, 66; DME wood via black liquor—in other words, from pulp and paper industry—26; and for biogas sewage, an area we did not talk about, 11. There have been some calculations in terms of the greenhouse gas emissions.

**Senator HEFFERNAN**—Does that mean that the paper industry could be put out of business, priced out of pulp?

**Dr Schuck**—No, because this is very much instead of just burning the black liquor, as they do at the moment, you use it productively: gasify it. This has been done in northern Sweden. There is a trial going on.

**Senator JOYCE**—You were talking about Sweden being oil-free by 2020.

**Dr Schuck**—Not oil-free, but lack of oil dependence.

**Senator JOYCE**—Are there any other countries? How are they going in that process? Where are they up to? And where are countries such as Denmark—I have heard they are 30 per cent—

**Dr Schuck**—For Sweden, in regard to transportation fuel, the European Union target was two per cent by 2005. They actually made three per cent. They think that they will be ahead of the 5.75 per cent by 2010. Sweden is well ahead. Denmark to my knowledge is very good in electricity, the heat and power side, but I think they have not done as well on the biofuel side.

**Senator JOYCE**—How are we going on the biofuel side?

**Dr Schuck**—Our target of—

**Senator JOYCE**—350 million litres.

**Dr Schuck**—350 million litres is less than one per cent of today's usage.

**Senator JOYCE**—Where are we right now?

**Dr Schuck**—Way less than that, but rapidly getting there. I believe biodiesel should be about double the national target within a year or two, so we should be close.

**Senator JOYCE**—But right now? Everyone is always talking about what is going to happen at some time in the future, but if someone were to say right now, 'Where is Australia at?'

**Dr Schuck**—I do not have that figure off the top of my head, but I suspect it is about one-third of one per cent. I would need to verify it.

**Senator JOYCE**—United States, where are they right now?

**Dr Schuck**—Similar or possibly even worse.

**Senator JOYCE**—I saw back here that they were about two per cent on one of the other former inquiries' reports. I can quote it to you.

**Dr Schuck**—Sorry, no, if I could correct that: the ethanol has taken off quite rapidly. I think they are at about 15 billion litres.

**Senator JOYCE**—Yes, they are at 15 billion litres.

**Dr Schuck**—I was thinking biodiesel.

**Senator JOYCE**—So we are about one-third of one per cent including ethanol now?

**Dr Schuck**—As far as I know.

**Senator JOYCE**—The US are about two per cent?

**Dr Schuck**—I think we use somewhere around 36 billion litres per year—I would need to verify this—of total fuels.

**Senator JOYCE**—We use about 36 billion litres in total.

**Senator HEFFERNAN**—It might be easier, Chair, if you took this on notice.

**CHAIR**—Yes.

**Senator HEFFERNAN**—So that you will not be guessing.

**Senator JOYCE**—What I am trying to do is give to the Australian people exactly where we are now. Everybody clouds it by saying where we might possibly be in the future, without telling them exactly where we are now. We are about one-third of one per cent now. The USA is about two per cent. They use about 15 billion litres. I think we are only using about 20 million litres, so they are using about 750 times as much ethanol or biorenewable fuels as we are; and they are not 750 times our population.

**CHAIR**—We are over time.

**Senator HEFFERNAN**—Finally, should we be ringing up John Gay at Gunns and saying, 'We've got this wonderful downstream industry for you attached to all that plantation stuff?

**Senator MILNE**—Attached to the black liquor.

**Senator HEFFERNAN**—Sounds good. If we have our own pulp plant there, that is a downstream industry?

**Dr Schuck**—Yes. It is basically a whole transformation of an energy economy.

**CHAIR**—Thank you very much. If you could provide anything that we have asked you on notice, that would be great. If you want to provide anything extra on top of that, we report on 19 October.

**Dr Schuck**—Thank you.

**CHAIR**—We will now have a short break.

**Proceedings suspended from 3.19 pm to 3.36 pm**

**McKIMM, Mr Ian, Consultant [Retired Fleet Engineering Manager]**

**ROWLANDS, Mr Mervyn Ashley, Fleet Engineering Manager, Boral Transport, Boral Ltd**

**CHAIR**—Good afternoon, thank you for coming. Because you have heard the spiel, I do not need to go through it again. I would like to invite you to make an opening statement and then we will get stuck in for a healthy discussion.

**Mr Rowlands**—It is good to be here. I should point out that Ian McKimm was my predecessor as fleet engineering manager at Boral. I am relatively new in the role. Ian did it for almost 30 years and he is here as a consultant. He has retired, but he is the person who has championed all the alternate fuels research and development for three decades in Boral, so he is the guy who really know what he is talking about. I would like to start by saying that we are not here to push any particular barrow. We are not technical experts in terms of fuel or the technology. We are from the transport industry, not the alternate fuel industry. We are takers of fuel and takers of technology, not suppliers. We are simply here to help relate our experience as a user of fuel, and a user of alternate fuels as well.

I would like to give a brief background to Boral to put some things in perspective, a bit of our experience to date, our position on alternate fuels and then some comments on that. In terms of my prepared bit, to keep it succinct I will read from my notes rather than try to remember everything. We are from Boral Transport, which is part of Boral Ltd. We are an Australian publicly listed company. We have operations in Australia, the US and Asia, over 15,000 employees, and we are a principal supplier of construction and building materials like quarry products, asphalt, concrete, cement, roof tiles, bricks, plaster board, timber windows, all those sorts of things.

We are generally a fairly energy intensive company. We use a lot of electricity, coal, diesel, petrol, LPG and natural gas for plant heating. We use about 14 petajoules per year of natural gas already. Within Boral, Boral Transport and Boral Concrete are the principal users of transport fuel. We have over 900 heavy vehicles—that is, over 20-tonne type vehicles—and probably a similar number of vehicles that are used by subcontractor drivers who work for Boral full time. It is a very significant amount of heavy vehicles.

In 2005, our fuel consumption was about 123 million litres of diesel, seven million litres of petrol and 3½ million litres of LPG. Depending on when you take the price of fuel, if you annualise that, it is a lot. It is $120 million to $150 million per year. In addition to that, we are Australia's largest consumer of bitumen for making asphalt and roads, so altogether it is probably something like 300 million litres of hydrocarbons we buy just from the oil companies, not counting natural gas.

Boral is very interested in our contribution to greenhouse gases and what we can do about it. Boral's cement division has been a voluntary member of the federal government's Greenhouse Challenge Program since 1997 and Boral was more recently elected to be a benchmark participant as a large user in the NSW Greenhouse Gas Abatement Program.

Diesel is Boral's single largest external spend on products and it is extremely important for Boral in terms of costs and sustainability. Boral Transport has a long history into the research and development of alternate fuels for heavy vehicles, principally as a result of Ian's efforts. The four main areas that we have looked at over time are LPG, which we looked at for heavy vehicles starting back in the 1970s. It is fair to say we eventually concluded that has fairly limited potential in a dual fuel application due to what turns out to be very low substitution rates that you can get, and the quality of autogas.

We looked at ethanol. Once again, it has fairly limited potential due to fairly low blend rates that you can achieve in a diesel engine and fairly poor performance and some operational difficulties that are peculiar to ethanol. We have looked at biodiesel. That is not too bad in terms of being easy to switch over to. You can just use it; but once again it has limited potential due to some future problems in meeting emission requirements as we get more and more stringent requirements on diesel engine emissions and perhaps some questions over long-term sustainability of the resources required for crops. Just getting enough water to grow enough crops to produce enough biodiesel to make it something significant is going to be tough. We certainly believe that natural gas shows the best potential as a long-term viable alternative fuel in Australia. It is abundant, it is low cost and we have it in Australia.

Boral to date has spent in excess of $500,000 in R&D for alternate fuels, so we would like to think we are fairly committed, not just involved. That is money out of pocket and gone. It is not just in heavy vehicles. Boral also supplies all of the LPG conversion equipment to Ford to convert their petrol engines to LPG.

We see natural gas as the most practical, logical and viable alternative to diesel as a fuel for heavy vehicles, and we would like to do what we can to advance that technology and promote its use. We are not suppliers of natural gas, but we see that it has potential for environmental benefits, for economic savings for operators of gas vehicles and for macroeconomic benefits for Australia in terms of helping with self sufficiency.

We presently have two large trucks on dual-fuel engines—that is, they can operate on diesel as well as natural gas—and these were part of a demonstration project that we conducted with the AGO. We have five more trucks on order that are going to have dedicated CNG engines. That is those that only use gas, not dual fuel, and these five trucks are for concrete agitator work. We believe we will almost certainly lose money on them, but we are doing this to promote the cause, to develop the equipment and because we want to gain first-hand knowledge so that we can talk with some authority on the subject and not have to rely on others who may or may not have some vested interest in technology or fuel.

In this instance, we are going to have to install our own in-house refuelling equipment because we are now down to just one CNG service station in Sydney. We had more. We were going to position these vehicles out at Blacktown, where there was a service station, but after we ordered the vehicles the CNG facilities were closed down. That leaves one left at Moorebank, which is closing as well.

In our opening remarks we would like to make two principal comments, firstly around equipment and logistics of the CNG industry and what is driving it, and our comments relate to heavy vehicles, not light vehicles or cars. At this point in time, the alternate fuel industry is

simply failing to meet demand. There is a very restricted choice of equipment for heavy vehicles, and the alternate fuel distribution system, except for LPG, is extremely poor. Not surprisingly, we seem to have a chicken and egg situation with CNG, like a lot of other fuels. The suppliers appear very reluctant to invest in distribution infrastructure unless there are lots of customers and, as I said, we are down to just one CNG service station in Sydney.

Potential customers, like ourselves, are very reluctant to invest in alternate fuel technology unless they can get the fuel. You would really have to ask why a small operator would go out and put a CNG engine in his truck now. He just has nowhere to fill up. Unless you have a lot of trucks, you cannot amortise the cost of your own in-house refuelling station, and you are just going to burn money. On top of that, the vehicle equipment suppliers are not there. You cannot just go out and buy CNG engines like you can diesel engines. The choice is all but non-existent.

In terms of the drivers for the industry, you have already had a session on LPG. The LPG industry originally grew up not because it was a cleaner fuel but because it was more economical. People had an incentive to go and do it. It would now seem to us that we are trying to drive the development of the wider alternate fuel industry not by economics but by emission regulations. It is not flying and it is not going to fly unless you change the paradigm. We need some sort of circuit-breaker to get industries established, to get products developed and commercialised, to develop infrastructure and to get some economies of scale. If you want to develop an alternate fuel industry, you need more and different economic incentives. Individuals and companies are going to have to want to do this, not be dragged.

At present, a CNG engine in a heavy-duty truck is going to cost more and it is going to weigh more. Even though the fuel may be far less expensive than diesel, it is not attractive economically unless the annual fuel consumption and mileage is extremely high. There is a bit of a dilemma there, which I will come back to later. Like all businesses, transport operators can only stay in business if their income is higher than their costs. Higher equipment capital costs and lower income due to reduced payloads mean that alternative fuel is way behind the eight ball to start with. If it costs more to buy the truck and it is heavier, you have higher costs to overcome and the vehicle is going to earn less because it can carry less. That, in many cases, far outweighs the fuel cost, so you are not going to get people wanting to change.

It is a simple equation in the transport industry. The more you can carry, the more you get paid. The best incentive for take-up of an alternate fuel, including natural gas, is to simply increase the allowable mass limit for trucks using alternate fuels relative to conventional diesel engine trucks. You must make some differentiation. The government set an interesting precedent for this in the last few years when they were trying to encourage the introduction of ultra-low-sulfur diesel, and they had differential in the fuel excise between ultra low and what was at the time the low-sulfur diesel. For a period of about two years, we had the ultra-low-sulfur diesel at 38c per litre and the low-sulfur diesel at 40c per litre on the excise. That provided a fairly dramatic incentive to move things forward a couple of years. You are going to have to differentiate if you want to promote the use of alternate fuel.

Differentiating the allowable mass limit for a truck run on alternate fuel is going to offset the impact of the heavier equipment and increase the income at the same time. It is the sort of thing that you can achieve at the stroke of a pen as a government. It is not going to cost you anything. You do not have to give users more rebates for alternate fuel. All you have to do is somehow

slightly differentiate in how much weight the trucks can carry when they are certified as alternate fuel trucks. It is not going to cost the government any money at all, it is easy to do and the operators are suddenly going to want to do it because they can earn more with that truck compared to a diesel engine truck. It is not dramatic. We are not saying another five tonne or 10 tonne. It is probably a tonne or perhaps even less. Spread over 10 or up to 20 tyres on a truck it does not sound much, but in many vehicles a tonne is absolutely dramatic.

**Senator MILNE**—What are the ramifications for roads and bridges and other weight—

**Mr Rowlands**—That is notionally the—

**Senator MILNE**—When you say 'the stroke of a pen', there are other ramifications.

**Mr Rowlands**—Yes. It is almost notional. A tonne or half a tonne spread over 10 or 20 tyres is insignificant.

**Senator MILNE**—That is what I am trying to establish. There are no ramifications as far as that is concerned?

**Mr McKimm**—In Victoria and Queensland at the moment you can already carry a tonne more than you can in New South Wales, and the roads in Victoria are not any worse than New South Wales.

**Senator MILNE**—I just wanted to clarify that before you went on to the next point.

**Mr McKimm**—It does damage the road more but not significantly.

**Mr Rowlands**—Theoretically, but the reality is that it is not significant. We honestly believe that at this point in time natural gas is the best alternate fuel for transport, because there is lots of it, it is cheap and it is in Australia. It is not some sort of incredibly marginal thing. There is genuinely a lot of it and it is cheap. However, the vehicle equipment supply industry at the moment is extremely limited. You just cannot go and buy those engines. A CNG truck is probably 25 per cent more expensive to start with, and that is a lot, and it is going to be heavier. Therefore, income is less. The fuel distribution network is basically non-existent and going backwards. In service stations we are taking CNG off the forecourt.

The overall economics of converting to CNG in heavy vehicles at this point in time are likely to be quite poor unless you use a lot of fuel and do lots of kilometres, so that you can amortise those capital costs. You will suffer a loss up-front with the more expensive vehicle. You can get it back with the cheaper fuel, but you need to use a lot of fuel to get back in front.

A change to alternate fuels by industry at large in the near term is likely going to need to be driven by economic benefits rather than environmental ones. That is partly because diesel fuel engines are becoming much more emission friendly than they used to be. There is no point in talking about engines from 10 or 20 years ago. What is happening now in diesel engine technology is incredibly different, and they are a much cleaner engine than they used to be. Probably the best incentive to kick-start the alternate fuel industry in heavy transport is with a mass limit advantage for alternate fuel trucks compared to conventional diesel engine trucks,

because that can dramatically affect the economics of owning an alternate fuel truck and will gives owners, like yourselves and everyone else, an incentive to do it.

**Mr McKimm**—More so than the fuel savings. That extra incentive of the extra mass or earning capacity of the truck far outweighs the fuel savings.

**Senator STERLE**—Mr McKimm, I unashamedly come from the trucking industry, but the other side. The lower end, being the single-owner operator side, would probably have a good debate with you about that, but I will wait until it is my turn.

**CHAIR**—You may as well lead off.

**Senator STERLE**—I want to declare my interest. I have a vested interest in anything that improves the performance of the road transport industry, being an ex truck driver and owner-driver. I will ask quite a few questions, and I am mindful of the time, but I would like to end up with a debate on the extra mass versus the incentives to go out there and spend that extra money. I think you said an extra 25 per cent, Mr Rowlands, in the cost of putting in these new technology engines for CNG. Can you put that in dollar terms for, say, a 400-horsepower engine, which is not huge for line haul but for agies it is in the market.

**Mr Rowlands**—Between $40,000 and $50,000 each for two C12 engines that we have had converted. For the 12-litre Caterpillar brand engines that we have put in two trucks, it is about $49,000 extra. We are buying five new Iveco trucks for concrete agitator works, eight by fours. It is $40,000 including fuel storage extra per truck, which is almost exactly 25 per cent. That is the best that we could do. We had been putting this purchase off for quite some. What you had to do previously was buy the truck and give it back to them. They would take the engine out, give you about a $15,000 rebate on a brand-new engine worth a lot more than that, put the CNG engine in, which is a dedicated CNG engine made by Cummins in the United States—the same brand as the one that started in the truck—and then convert the truck in terms of fuel storage. You have to have the gas cylinders, all the valving and all the refuelling equipment.

You had to deal with that company separately, the engine company separately and the truck supplier separately, so you had three different suppliers for the one truck. That was never going to fly with us. To promote it, we wanted to go back to the way you would normally buy a truck. You would just buy it off the truck company, and they had the suppliers to them. We finally came to a negotiation with Iveco, and they were good enough to do that. The minimum we could do was five trucks that they could make in a batch on the production line. These dedicated engines from the United States are going straight into the trucks and Iveco are going to be the single source of supply to us. We will still talk to the Cummins people and to the fuel tank suppliers and so on, but we now have a single source of supply, which is good, and they will carry the can on all the R&D, all the warranty and so on. But $40,000 was as small as we could get the differentials and still—

**Senator STERLE**—This is for your agitators.

**Mr Rowlands**—That is right.

**Senator STERLE**—How long would it take you to recuperate that extra $40,000 in fuel economy? I will not hold you to your answer.

**Mr Rowlands**—I have some numbers.

**Senator STERLE**—Things like the price of fuel.

**Mr Rowlands**—There is no single answer to questions like that. It is a three-dimensional variable. One variable is the price differential between diesel and the alternate fuel. Fortunately for the alternate fuel industry, that gap is getting bigger. The other one is the extra initial capital cost of the truck. The third variable is how much fuel you use per year. Depending where you sit is where you get the break-even.

**Mr McKimm**—Our agitator truck only does 20,000 kilometres per year.

**Mr Rowlands**—There are two dilemmas: one is that where you can easily access the engine technology—which is, we can buy these Cummins engines; they are only eight-litre, 280 horsepower type engines—where you have good access to the engine technology, it is at the lower horsepower end of the range where, in our business—concrete agitators—you do not do many kilometres, do not use much fuel, and therefore you will not get a payback. These trucks do about 20,000 kilometres a year. The average round trip is only 18 kilometres because you do not go very far with your concrete. You do not do many kilometres, do not use much fuel, and it takes a much longer time to get the fuel cost advantage to pay back the capital cost loss. If you do lots of kilometres—the plus-400 horsepower type engines—you virtually have no choice in engines.

**Senator STERLE**—That is what I am leading to. As good corporate citizens as Boral are—we should recognise that; there is no argument—to come back to you, Mr McKimm, in alluding to the small operator having the incentive, currently for a small operator the incentive is not there. It just cannot be. It is not a loaded question. I am supportive of what you are trying to do. But we have realised that we cannot put a figure on that, in terms of profit for your—

**Mr Rowlands**—We think in our case about 7½ years. We are going to have to install our own in-house refuelling facility and that costs a lot of money. We are amortising that over only five trucks initially, so that is a fair capital cost burden for each of those trucks to have to carry, plus the $40,000 per truck. To pay that back with what we save in fuel per year is fairly difficult. If these trucks were doing 150,000 kilometres a year, then it would be very quick, or relatively quick.

**Senator STERLE**—If they were doing 150,000, they would be on a small line-haul operation.

**Mr Rowlands**—Yes. If you are on line haul, where are you going to get the gas because you cannot drive along the Hume Highway or up the Pacific Highway and refuel with natural gas because there is not any.

**Mr McKimm**—But if you could carry another half-tonne of concrete, the payback period would come—

**Mr Rowlands**—We are doing this for the right reasons, but we are going to lose money on it. If that truck could carry another half-tonne or one tonne, you would not want to stand between a small business operator and the engine supplier because you would be run over in the stampede. It would be really attractive.

**Senator STERLE**—Economic to do.

**Senator MILNE**—You are obviously doing it for the 'right reasons', in that there is not much of a business case that you are establishing so far, from what we are seeing. If you had the most efficient diesel engine in terms of $CO_2$ emissions and natural gas, what is the differential that makes this worthwhile doing environmentally, if it is not worth doing financially?

**Mr McKimm**—There is about an eight per cent reduction in overall emissions—not just in $CO_2$—by using the gas engine over the diesel.

**Senator MILNE**—Let us assume that you did it for all of your heavy vehicles, not just five, what reduction in greenhouse gas, or overall emissions, would you achieve compared with what you have now?

**Mr McKimm**—It would be the same: eight per cent of the total tonnes of emissions, if you converted the whole fleet. I do not know what the tonnes are.

**Mr Rowlands**—I am not sure. We could do some calculations and get back to you, if that is what you would like. The relevant number is eight per cent. You can extrapolate that to anything.

**Senator MILNE**—The relevant number is eight per cent—yes, that is right—to anything.

**Mr Rowlands**—Most of Boral's trucks are back to base type trucks. We are not a line-haul general freight type company; 98 per cent of our trucks probably come home every night.

**Senator MILNE**—You are saying that a change to the weight limits would achieve an eight per cent improvement in emissions performance nationally for everyone.

**Mr Rowlands**—It would provide incentive for us to want to change.

**Senator MILNE**—It would facilitate it occurring. In the absence of that, it is not going to happen. That is what we are hearing.

**Mr McKimm**—That is right. That is only the alternate fuel engines.

**Senator MILNE**—Yes, because then it is a level playing field.

**Mr McKimm**—That is right. It must only be for the alternate fuel engines.

**Mr Rowlands**—It would also be somewhat difficult for a company like Boral, because although we have lots of trucks and we are a very big consumer of diesel in Australia, we are also very thinly spread. We are not a giant transport company or a big mine or something that has giant bases where we can put in big infrastructure for in-house refuelling. We now get our

diesel delivered to 450 different sites in Australia and a lot of them are very small—just concrete plants in the country or a little asphalt depot or a little timber place. You are never going to be able to afford to put your own in-house natural gas refuelling facility for one or two trucks. You could never do it. Eventually, to really roll it out, you are going to need a good retail distribution infrastructure like you have now with LPG.

**Senator STERLE**—To set up these five agies for the CNG, how much extra equipment in terms of weight does it require? Let us talk about tanks, plumbing and valves or whatever. I will tell you where I am coming from: I would not have thought that it would be half a tonne worth of gear, but I will let you explain that.

**Mr Rowlands**—No, it is not. In terms of plus rate, it will be a couple of hundred kilos.

**Senator STERLE**—I can see where you guys are going, and I am not knocking it. For you to take up the challenge of eliminating greenhouse gases, there has to be an incentive.

**Mr Rowlands**—Yes.

**Senator STERLE**—Just for my fellow committee members, it is not a weight for weight thing.

**Mr Rowlands**—No.

**Senator STERLE**—Which really boils down to you guys being able to cut some more weight. I understand that.

**Mr Rowlands**—You are exactly right. We are not saying that the additional allowance that we suggest you should try to get—a tonne was a nice round number; whatever it is—

**Senator STERLE**—Over 470 trucks for five days a week, I can understand and I am not knocking that.

**Mr Rowlands**—The maths applies whether it is one truck or 470. But if you can give a tare weight advantage to something that is using alternate fuel, then there is an incentive for that person to go and use the alternate fuel. It is not simply a matter of making up the extra weight that the alternate fuel system weighs in the first place. There is a weight penalty, which means that there is automatically an income penalty. What we are trying to do is redress that, plus a bit. There is no point in just making it cost neutral, because people will say, 'Why would I bother?'

**Mr McKimm**—There can be a sunset clause on that: it need not be forever. It can be until the industry establishes itself and there can be a volume increase in the amount of engines sold and the amount of people coming in to supplying that part of the industry. Once the industry is established, away you go. It can be like we are in 2012: there can be an evening out of excise duties and so on. It can come back to a level playing field, but you have to get the industry off the ground.

**Senator STERLE**—I do not agree. I do not think that we have to talk about sunset clauses. I think that if the trucking industry, which was tax—

**Mr McKimm**—I am only trying to get it started. It would be nice to go on.

**Senator STERLE**—I understand. But I am coming from another angle. An industry that was taxed 2½ times greater than any other industry and I will argue until the cows come home that the trucking industry pay their way, regardless of what certain bureaucracies try to put up. But I think the incentives should be coming from government. Government should drive this, and I know that there are market pressures and competitive pressures, but I must come back to the single operator. I have to come back to that, because a lot of your people are single operators.

**Mr McKimm**—That is right.

**Senator STERLE**—I cannot for the life of me see where a single operator could fork out $40,000 more for the ability to be able to—

**Mr Rowlands**—You are just not going to do it.

**Senator STERLE**—It is just not going to happen, that is right. I wanted to clarify that. I have a view that there could be greater incentives driven by government, if we really wanted to address the greenhouse gas issues and our future supplies of oil.

**Mr Rowlands**—You need to step out of the normal paradigm, which is to somehow differentiate on fuel excise or something. We have done the numbers. Boral can buy natural gas at good prices in certain locations, because the price you pay tends to be a function of how much you use at a particular location, and the prices vary dramatically. We use a lot of natural gas at some of our big fixed plant locations, where we use heating for bricks and tiles and things like that. You can get that gas quite cheaply, and the government gives a rebate of 12½c or something like that. It can bring the net price down so that it is a fairly cheap commodity in certain places, but it can still be uneconomical because of the initial up-front cost for a truck that does not use a lot of fuel anyway because it does not do many kilometres.

**Senator STERLE**—What about the life span of these engines? Have they been used elsewhere in the world regularly?

**Mr Rowlands**—There are thousands of Cummins engines in America.

**Senator STERLE**—It matches up to the normal diesel?

**Mr McKimm**—Not quite, but it is relatively okay. You could see your way past those sorts of issues in that particular engine. Other engines are perhaps not quite as developed, but the Cummins 8.3 engine has had a lot of development and is used in the waste industry and so on and so forth. They have a reasonable history, so you could live with that.

**Mr Rowlands**—Part of the dilemma for us is that, at that end of the spectrum where there is good engine technology available, we do not do many kilometres. Where we do a lot more kilometres, we need bigger engines and there are no engine choices. There is one in Australia at the moment, the C15, and that is it.

**Senator HEFFERNAN**—This is like a big V8 Cat thing?

**Mr McKimm**—It is a six-cylinder Cat but it uses diesel fuel and gas together. It is a dual-fuel engine.

**Senator HEFFERNAN**—But there has been trouble, hasn't there?

**Mr McKimm**—We have had our difficulties, yes, but it can be made to work.

**Senator MILNE**—In terms of the issue that Senator Sterle raised about the capital up-front cost, the extra $40,000 or $50,000, I think he is absolutely right. There would be very few small owner-operators that could part with that. Would the increased weight limit be enough on its own to overcome such a big up-front disincentive?

**Mr Rowlands**—Yes.

**Senator MILNE**—It would make the economics stack up for owner-operators?

**Mr Rowlands**—The only way these guys make anything is to cart product. As I said before, the more they can carry the more the income. We were told that these agitators are the first in the world to use CNG. Concrete agitators get paid a lot per tonne. They are fairly high-income vehicles. They do not go very far, so dollars per tonne per trip is very high. If you could give them half a tonne or one tonne, that could quite dramatically increase their income.

**Senator MILNE**—And would make their capital cost up-front achievable.

**Mr Rowlands**—Yes. If we could get another one tonne on a concrete agitator, we would have most of our fleet on natural gas or on whatever, it is that dramatic at that end of the spectrum.

**Senator STERLE**—The economies of scale.

**Senator HEFFERNAN**—Would that put the price of the goodwill on the truck up?

**Senator STERLE**—It does not exist, Senator Heffernan.

**Mr McKimm**—The industry does not work that way any more.

**Senator HEFFERNAN**—It used to.

**Mr McKimm**—It is reflected in their rates, so a subcontractor will benefit by running on that fuel. You will appreciate there is a different income earning capacity on a concrete agitator because of the high cost per tonne of running it around town compared with, say, just gravel or sand or cement. Cement is in between the concrete and the gravel.

**Mr Rowlands**—The economies vary a lot depending on the truck and the application and the industry.

**Senator STERLE**—And the buying power.

**Mr Rowlands**—We are looking for the change differentially with diesel, not just to increase all trucks, because that will not make any difference at all.

**Senator JOYCE**—I want to refer to your comments in your report in regards to product availability, fuel distribution logistics and public refuelling. You said:

Perhaps the biggest barrier to be overcome here is product availability and distribution logistics.

You go on to re-emphasise in the biodiesel section. It always seems to be the chicken and the egg. If there was greater product availability, you would use more of the product and, because not enough people use enough of the product, there is not the product availability. Do you have any suggestions as to how we get around that scenario?

**Mr McKimm**—No.

**Mr Rowlands**—To initially make the break is clearly difficult. Someone is going to have to go out on limb.

**Senator JOYCE**—Mandate something?

**Mr Rowlands**—No.

**Senator HEFFERNAN**—Watch him! He is likely to booby trap you.

**Mr Rowlands**—As I said in my opening remarks, people are going to have to want to do this. We do not want to have to drag people kicking and screaming with a mandated change.

**Senator JOYCE**—Why would they want to do it when they can sell a product to you that is far dearer and they make a lot more money out of it?

**Mr Rowlands**—Who is 'they', sorry?

**Senator JOYCE**—The oil companies. Surely they have a responsibility to their shareholders to try and get the best return on capital that they possibly can, and they are not going to do that by selling you a cheaper product.

**Mr Rowlands**—It depends whether the oil companies are going to be the ones selling us the alternate product.

**Senator JOYCE**—Maybe I am being naive here, but in relation to the truck driver, such as Senator Sterle was, he or she would have to have the capacity to fill up their vehicle with one of these biorenewable alternatives, and the most likely place they are going to do that is at a petrol station.

**Senator MILNE**—Or at home with natural gas.

**Mr McKimm**—Biodiesel is a bit different to CNG. We see CNG as being the best opportunity for an alternate fuel.

**Senator JOYCE**—Why is that? I heard you say at the start that CNG is the best alternative. Why not biodiesel or ethanol? I know ethanol is probably not in it—it is more for lighter vehicles—but why CNG?

**Mr McKimm**—Those alternate fuels—the ethanol, the biodiesel and those sorts of things—can be done, and they will work, but they have limited potential. Take the amount of fuel that is used and the amount of acres that have to go under plantation to be able to create the fuel that we need to run as a diesel fuel, and it is only a diesel extender, it is not an alternate fuel. It can be used as an alternate fuel, but to produce between 1,000 and 5,000 litres of fuel per acre a year, you have to have a hell of a lot of acres under agriculture to make enough ethanol or biodiesel—

**Mr Rowlands**—With a lot of rainfall.

**Mr McKimm**—with a lot of rainfall and water resources, so it does not seem to us to be the best use of Australian resources to use agriculture. Sure, use it where you have excess product capacity and so on and so forth, but it is limited. Natural gas is available everywhere and can be a substitute for diesel.

**Mr Rowlands**—The biodiesel industry is also now pricing biodiesel on parity with petroleum diesel.

**Senator JOYCE**—They should not be, because if they are—

**Senator MILNE**—But they are.

**Senator JOYCE**—The argument we have there, even in the ethanol game, is that the oil companies are pricing E10 the same as standard fuel. They argue that, to give it its true cost, which is obviously at a discount, would be to imply that it is an inferior product, which they agree it is not. The whole argument is full of holes. They can get away with it, so they do.

**Mr Rowlands**—We have also spent some time in the past looking at ethanol, in diesel as opposed to petrol. I was not there, but Ian was part of that. It had some significant technical difficulties. It does not mix with diesel. It needs to be done as an emulsion. The driveability of the engine is really quite difficult and there are power problems and all those things.

**Senator JOYCE**—I think it is biodiesel. I do not think we would be suggesting ethanol with diesel. For motor vehicles it is completely different because the price at the terminal gate is cheaper than fuel, so the availability of the product is apparent. We have heard in previous representations to this committee about the development and availability of new engines in Europe, such as—and you might help me out here—the DME Volvo, the new engines coming online from Volvo. Have you had any comments on that?

**Mr McKimm**—They are not really coming online. As the speaker said, they are experimental; there is research. It can be done, but not in the real world. It really is just research: if you ran out

of diesel completely, yes, you could get it from these areas and you could make an engine that would run on it. But it is not going to be, in the near future, a realistic alternate fuel.

**Senator JOYCE**—Diesel is obviously a hydrocarbon or oil based product. What is your vision for the future on oil pricing? It seems such a vital overhead or cost. What is your view of where this is going?

**Mr Rowlands**—In terms of where it is going in price?

**Senator JOYCE**—Yes.

**Mr Rowlands**—If it ever goes down again, the crude price is probably never going to go back below 60 again.

**Senator JOYCE**—Why would it go down?

**Mr Rowlands**—It is very unlikely. There are always swings. For the last eight years I have been on the supply side of that: it goes up and down. It goes through annual cycles, with the northern winter and the American driving season. All these things overlay it. But generally at the moment it is going up. There really is a lot of demand-supply economics driving things, but at the moment world supply is very close to world demand and we are in a fairly volatile, awkward situation, and I cannot see anything which is going to really change the supply side to be a lot better than the demand side in the future. We are inexorably in an up cycle.

**Senator HEFFERNAN**—What about coal liquefaction?

**Mr Rowlands**—I am not an industry expert on that. I cannot tell you.

**Senator JOYCE**—If the price continues to swing up rather than down, as it has over a number of years—and I do not think that it is swinging; it is heading up because of the demand in India and China, and also the reduction in supply capacity or the vagaries in the areas where the supply capacity comes from—how is your company going to deal with the overheads that are coming into the market? Do you have any ideas for other areas, such as a greater use of rail or other things, to completely sideline the idea of using trucks?

**Mr Rowlands**—Not to completely sideline, because that is the nature of the business that we are in. As I said, although we as a company are very big users, we are not highly focused. We are spread very thinly across 450 sites where we get bulk diesel delivered by the oil companies, as well as 5,000 fuel cards that we use within Boral for company cars and trucks, and subcontractors who buy their fuel from service stations. It is very difficult for us to say, 'We've got this silver bullet,' or any magic solution which can change things. What we have are thousands of little local deliveries and obviously you cannot set up a train line or something to deliver concrete from that plant to there, or hot asphalt from there.

**Senator JOYCE**—But you can move part of that.

**Mr Rowlands**—We do. Our biggest asphalt plant and concrete plant in Australia is at Enfield, and we bring most of the product there by rail from the south coast—the crushed stone and aggregate by rail.

**Mr McKimm**—Five years ago that was done by trucks; now it is done by rail. Where it is feasible, that is what we do.

**Senator JOYCE**—If you wanted to get to regional areas, down to Junee for instance, you would move it down to Wagga, I suppose, by rail? No?

**Mr Rowlands**—Most of our product is quarry products and things—low-cost, local cartage. You are not going to move crushed rock 400 kilometres; there are a dozen quarries much closer. We are not in that sort of business.

**Senator JOYCE**—Going back to my initial question, does Boral have any plan to deal with the ever-increasing price of oil?

**Mr Rowlands**—I guess to get as efficient as we can. The biggest gains that we have made over the last few years have been in truck configurations—moving from what were semitrailers to B-doubles and to truck and dogs, where you can get more on a truck; more tonnes per litre; one engine carrying 35 tonnes instead of 25 tonnes. Better and smarter configurations are leading to the biggest improvements; keeping current with new trucks and new engines that are more fuel efficient. I wish I could give you a really—

**Senator JOYCE**—No, you have answered the question. It is basically more efficient use of an oil based product. Better configuration surrounding oil based product is still the premier plan for Boral in dealing with the oil prices, for want of a better word.

**Mr McKimm**—That is why we have an interest in alternate fuels. If there is something there, we want to know about it, we want to be up with it, and have it as an alternate, if and when the time comes that you cannot afford to use diesel.

**Senator JOYCE**—Thank you very much.

**Senator HEFFERNAN**—Is the day of recycling oil getting any closer in a big way?

**Mr McKimm**—Recycling oil?

**Mr Rowlands**—Lubricating oil?

**Mr McKimm**—Using it as a lubricant?

**Senator HEFFERNAN**—Yes.

**Mr McKimm**—Again, it is this much.

**Senator HEFFERNAN**—Bugger all.

**Mr McKimm**—Yes.

**Mr Rowlands**—There is a big recycling industry in Australia. All of the engine oil that we use goes back to recyclers.

**Senator HEFFERNAN**—Yes. We have got one in Wagga.

**Mr Rowlands**—Yes, the one at Wagga. There is Southern Oil Refiners and we know the people there, and the one in Sydney. But that is a different side of things: that is on the lube side rather than the fuel side. Part of the output from the re-refining of engine oil is diesel, but it is the bit that sneaks past the pistons down into the sump, and they reclaim that.

**Senator MILNE**—What price of oil is Boral currently working on? What is the assumption behind all of the planning? As you have said, you are going to greater efficiencies; you are looking at the alternatives and so on. What is your basic assumption about the ongoing price of oil. Clearly, if you thought it was going to be back to $11 next week, you would not be thinking about this.

**Mr Rowlands**—I have spent the last six years with Boral buying all the fuel and hedging it and all that sort of thing. The best assumption that you can make at any point in time is the current price. I know that sounds a bit circular, but we try to hedge our exposure to both the price of bitumen—because we spend more on bitumen than we do on fuel—and the price of fuel. We have to hedge Singapore Gas oil prices, which is like diesel in Singapore. We do not hedge crude directly, but they are obviously related.

**Senator MILNE**—I will ask you a different question then. ABARE is projecting a $30 oil price into the future. Is that something Boral would be working on?

**Mr Rowlands**—No.

**Senator MILNE**—Thank you.

**Mr Rowlands**—We wish.

**CHAIR**—Thank you. We have to stop because we have gone overtime. It has been very useful to hear how industry is implementing this. If you want to send in anything further, we are reporting on 19 October.

**Mr McKimm**—Likewise, if the committee requires any further information, I am sure Merv would be only too happy to supply it.

[4.25 pm]

**BLACK, Mr Kevin Raymond, Managing Director, The Natural Gas Vehicles Group Pty Ltd**

**CHAIR**—We will resume with Mr Black from The Natural Gas Vehicles Group. I know that you have been sitting down there and you have heard me do my spiel.

**Mr Black**—Would you like me to repeat it back to you?

**CHAIR**—You would probably do it better than me. I will invite you to make a brief opening statement.

**Mr Black**—Thank you. By way of background, I have been working directly with natural gas vehicles since 1996, but I have been researching and working towards that since 1983 when I was involved in the administration of Canberra, when we first started getting natural gas into Canberra, and we were looking at ways of maximising gas use to reduce the unit cost. At that time we realised that the technology for natural gas vehicles was a bit primitive and we were not ready for it. But by 1996 we were. At that time I was working with Liverpool City Council in Sydney, and we initiated the first fleet decision to go to natural gas.

A lot of the government's alternative fuels policies that were adopted in 1997 through to 2001 were based upon our project. We set up a taskforce in which both federal and state governments participated, and that led to the Alternative Fuels Conversion Program and the CNG Infrastructure Program. Unfortunately, between 2000 and 2004 there were 24 different changes in government policy relating to alternative fuels, which created such confusion and such uncertainty that virtually all of the big players who were involved in the industry said, 'It ain't worth doing any more,' and they pulled out. Those changes and that uncertainty killed the industry in Australia.

Since mid-2004 I have been working primarily overseas, doing feasibility studies and project work in places such as Yemen, Dubai, Iran, China, Thailand and Malaysia. We are being encouraged to do work in India and Pakistan at the moment, but we are a bit reluctant about that, and we are looking at a project in France that is likely to go ahead.

**Senator HEFFERNAN**—What drove the changes?

**Mr Black**—There were changes in fuel tax policy—

**Senator HEFFERNAN**—The fuel companies?

**Mr Black**—The fuel companies were never involved. This was the thing. It was the big gas utilities: Origin, AGL, TXU in Victoria et cetera. Under the Alternative Fuels Conversion Program and the CNG Infrastructure Program, the Australian government paid 50 per cent to 70 per cent of the cost of three public refuelling stations in Sydney that AGL installed. As our colleagues from Boral said—and I thank them for their generous support, even though we have

not paid them—over two years ago AGL decided that they would pull out of CNG or natural gas vehicle fuels because it was just simply too small a business for them and because of all of those uncertainties and other things. Two years ago they started actively discouraging people from considering CNG. They have closed down two of the three stations and they are ready to close down the third.

**Senator HEFFERNAN**—Has the government asked for their money back?

**Mr Black**—No. The government actually did a very governmental thing and said, 'What you have to do is keep these open for three years,' so three years and one day later they were gone. Through some financial partners in Singapore, we were prepared to buy all of their natural gas vehicle infrastructure. They had five refuelling stations—three in Sydney, one in Goulburn and one in Canberra—they had 50 depot based refuelling stations for a courier company and forklifts and what have you. We said, 'We're happy to buy that in a single package and continue to operate it,' and they broke it up piecemeal and sold it off for export. They still have their depot based refuelling and they still have the Moorebank and Goulburn stations, but they have put those out to tender to be sold.

Effectively, an industry with great potential in 2000-01 has gone. It is dead. In May 2004 we made a decision to shut down our company, cut our losses and retreat into the shadows, before we started being approached on these international programs. We are doing projects in Iran, for instance, on vehicle conversions and on refuelling. We have just completed a project to convert a motorbike to natural gas, because they make 1¼ million motorbikes a year. It is interesting that it is the big oil producing countries who are pursuing internal natural gas programs, because they want to save money. They want to use the natural gas and export the oil.

**Senator MILNE**—When their oil runs out, they are self sufficient.

**Mr Black**—Yes. We believe that Australia is desperately in need of a national fuels policy to address the energy security issues, to develop an energy diversity program and a secure fuel environment for this country. There are so many pressures on the petroleum industry in terms of—and you will have heard from all the experts—diminishing reserves, limited excess refining capacity, the threat of terrorism, the instability of the regions that have all the oil. Sixty-five per cent of the world's remaining oil supplies are in the Middle East. Another 20 per cent are in central Asia—Kazakhstan, Siberia, Russia—which is hardly more secure than the Middle East. Demand is exceeding supply. China's oil buy last year was 48 per cent higher than the previous year. India's was 29 per cent, and that is an increasing scale. It is putting enormous price pressure on the world supply.

An American think-tank in August last year did a little study that said, 'Today's production is 83 million barrels of oil. If we reduced that by three million barrels, what would be the impact?' The impact was that oil went to $160 a barrel, $2.90 a litre in Australian prices. It would have spiked the inflation in America by 12 per cent. It would have enormous consequences, to the extent that deliveries to industry and supermarkets and what have you would have been severely compromised. We are even more vulnerable than the United States. We have longer distances, more remote communities and I think it is insanity that we are not preparing for the future.

As individuals, our government forces us to provide for our future through superannuation. They encourage us to provide for the unexpected through insurance—house, fire and car insurance and compulsory third party—and all those things, but the government does not have an insurance policy for our most fundamental resource, which is energy. We see that as a tragic oversight.

**Senator MILNE**—That is why we are having this inquiry.

**Mr Black**—Yes. It truly is a prudent way to do things and, for some reason or another, we have not addressed it. The government put out a white paper in 2004 on energy, and the conclusion in terms of transport fuel was, 'Well, there have been crises before and we've blundered through, so we'll probably blunder through again.' To me, that is a dangerous approach.

We think that the future needs many options. We need alternative fuels. Ethanol, biodiesel, natural gas and LPG all have a role to play. No one fuel will ever take over from petroleum, until perhaps we have mini nuclear reactors in our cars or something. Everybody seems to pinning their hopes on hydrogen, which it is still, frankly, pie in the sky. We do a lot of work with the CSIRO and we talk to them fairly frequently. I am on a hydrogen panel with the CSIRO. The greatest fear of hydrogen researchers in this country is that governments and the media will hype it up so much that people will have expectations that will never be met.

We did a thing for a hydrogen conference in Melbourne last year, forecasting the best case scenario for hydrogen. If we overcome all of the technical issues and there is an affordable practical hydrogen vehicle available in 2015 and we get absolutely the best take-up of that technology for the next 50 years, we will have a very interesting scenario.

We currently have about 13 million cars in Australia. If we got that scenario, we would have 20 million cars on hydrogen by 2065 and we would have 24 million cars still on current fuels. There is never going to be a point where hydrogen will have the whole market, if it ever succeeds. You can buy a quite good, practical hydrogen fuel cell for a vehicle now. The difficulty is that the safety, distribution, storage, compression, liquefaction and usage problems of hydrogen are nowhere near being resolved, and nobody has an idea how to do it. The most practical way of using hydrogen today, or at any time in the foreseeable future, is to store the fuel on-board as natural gas, with an on-board reformer. That may be a solution but, again, it is still a long way down—

**Senator HEFFERNAN**—What is the by-product of that?

**Mr Black**—One of the advantages of natural gas is that it is already 80 per cent hydrogen. As CH4 it has one molecule of carbon, four of hydrogen. It is the most practical fuel. It is much more practical than water in making hydrogen.

**Senator HEFFERNAN**—When you drive a hydrogen car, what comes out of the exhaust?

**Mr Black**—Steam—water vapour. Again, nobody has worked out what the cost of hydrogen might be. At the moment, it is the equivalent of about $100 a litre. We believe that natural gas is certainly the solution for Australia. We have huge indigenous supplies. We are exporting a huge

amount and we are discovering more all the time. At the moment, it is said that we have at least 100 years' supply of natural gas. That is from traditional gas wells, oil wells and the like.

**Senator HEFFERNAN**—At what rate of consumption, though?

**Mr Black**—That is at the present rate plus 25 per cent, I think.

**Senator HEFFERNAN**—We really do not have 100 years.

**Mr Black**—No. But we have other sources of natural gas that have never been touched. We have marine hydrates, which are a new source of natural gas. That is probably the most remote one. We have landfill methane that is being captured in some places and used to generate electricity. We have huge reserves of coal seam methane that are just sitting there and leaching into the atmosphere and creating greenhouse problems in the process. That could all be captured. Everywhere from Central North Queensland through to Ballarat and Bacchus Marsh in Victoria, all the way down the east coast, is one huge seam of coal, and we can be tapping into that all the way down.

More importantly, there is the renewable, the sustainable natural gas. Using anaerobic biodigestion you can produce natural gas from any organic product. I have worked as an adviser on a project that has gone ahead in Israel. They are converting 200 tonnes of municipal garbage a day into natural gas and fertiliser, and reducing their landfill requirement to about 12 per cent of what it was previously.

One of the fascinating things is that about 50 per cent of all the food that is produced in Australia goes to landfill. If you consider what a dreadful converter of food the human body is and you counted the sewage as well, that figure comes up to about 85 per cent of all of our food being got rid of.

**Senator HEFFERNAN**—It is a throwaway society.

**Mr Black**—Biomethane will use all of that—the sewage, the garbage, the waste product from abattoirs, blood and bone, whatever—and it can be used to produce methane; in fact, Sweden is one country that does it in a big way. A couple of years ago I went to a plant in Helsinki; the City of Berne in Switzerland actually runs its entire bus fleet on biomethane produced from sewage. It is a way of going and it really increases our capacity to work dramatically.

The other issue is that natural gas is not just—as our friends from Boral were talking about—CNG. In the North West Shelf we produce LNG which we send to places like China and Japan and, surprisingly enough, they run their vehicles on it. They buy it from us, we send it over there, and they run their vehicles. We believe that any vehicle that uses more than 50 litres of fuel a day should be running on LNG rather than CNG. The technology is there now to build small-scale LNG plants and we are looking at a couple of projects like that in Thailand at the moment, one using stranded gas and one using biomethane to fuel fishing vehicles. LNG has a really good facility for marine fishing applications, because it is actually stored at minus 160 degrees Celsius. What you can do is, in the heat exchange to vaporise that gas, use it to chill the catch at the same time so you do not need an additional refrigeration plant. There are currently 1,000 fishing boats tied up at ports in Thailand because they cannot afford diesel.

If I could mention two other points: one is the biofuels issue. That has been pretty well handled, but I would like to point out that the 350 million-litre target for 2010 actually represents on the 2005 consumption figure 1.3 per cent of the national fuel requirement. Over the previous five years, our fuel consumption increased by 2.5 per cent a year, so by 2010 350 million litres will actually represent about 0.8 per cent of our fuel requirement. That, frankly, is nothing. With all the other limitations of land and water and what have you, it may get to two per cent at some time in the future; it may get to three per cent. But that will be a small drop in the bucket, particularly when it is really just an extender for petroleum fuels.

Given all of that, we believe that natural gas is the way to go. We have spent a lot of money on research and development. We have developed, as a company, probably the most advanced sequential multipoint fuel injection system for natural gas in the world at the moment. We are selling it into other countries. We cannot sell it here because we do not have the refuelling infrastructure. We believe that natural gas has a huge future in this country if we can get the sort of government support that has been given to ethanol. We need to build up the refuelling infrastructure to put in the strategies that enable people to use it.

We know, for instance, that there are bus operators in Sydney, Melbourne, Hobart and Launceston that would be absolutely ready to convert to natural gas, and taxi operators, en masse. They would be great drivers for a public refuelling infrastructure. That was our original intention—local government, taxi operators, courier operators and the like. Unfortunately the original intention or the original impetus was for heavy vehicles and, yes, there is a great opportunity for heavy vehicles but the weight issues that Boral raised indicate that LNG is definitely the way to go for heavy vehicles. It is just that there are no LNG production facilities on the east coast—sorry, there is one in Melbourne, but it is used for what is called 'peak shaving', to cope with peaks and troughs in the gas supply, and demand in Melbourne.

**Senator MILNE**—I want to follow up this issue of the refuelling and home fuelling and the cost of compressors and so on. If we assume that what you are saying is correct and we have this fuel there that can be used and can be captured from landfills and all the rest of it, the issue then becomes the distribution network.

**Mr Black**—Yes.

**Senator MILNE**—You mentioned that the way it was rolled out before was that the government paid one operator to roll some out and then three years later they closed them down, so that was not an effective strategy. What do you think is the most effective strategy to facilitate widespread use?

**Mr Black**—The most effective strategy, I believe, is a variant of what they did before, but instead of paying up-front, providing some form of subsidy for the refuelling infrastructure post installation and requiring them to operate not for three years but for 10 years. The life of a natural gas refuelling facility, be it CNG or LNG, is a minimum of 15 years. Within 10 years of having a comprehensive roll-out of refuelling sites, the calculations we have done indicate that for eastern Australia, Tasmania and South Australia—we have not taken Western Australia and the Northern Territory into consideration at this stage, simply because we do not have enough information—you would need around 800 refuelling sites. That would provide sufficient security of supply to encourage people to buy vehicles, both as fleet operations and as private vehicles.

**Senator MILNE**—What about pilots and the idea that a community might decide that local government can invest in methane capture from landfill, a facility to clean it and supply it and then convert its own local government fleet—and maybe the local taxi fleet or whatever—over to it and have the sewerage works also attached to it, therefore dealing with their waste disposal issues, and driving it and rolling out a local reticulation. What we need is some sort of pilot to show that it can actually be done. That is the problem. One refuelling station here or there does not show people how you can get the synergies of use.

**Mr Black**—We have designed—originally for Iran, but we have looked at it for places like Yemen and remote communities in Thailand and Australia—

**Senator MILNE**—That is another one, precisely.

**Mr Black**—the concept of doing just that. We modelled the Australian one on the concept of using coal seam methane, but effectively at the source, whether it is coal seam or biodigestion or landfill. You liquefy the gas, which makes it 99-point-something pure methane. You can sequester all of the heavier fractions, because they freeze off as you go through the liquefaction process, and then you can revaporise it for gas distribution through a pipeline network to a community, industrial uses, transport uses, power generation. The heat exchange process of that revaporising can be used for either cooling a community, if it is in Central Australia, for argument's sake, or for some form of community refrigeration process.

We have done the design work for that in broad terms, and it looks like Thailand will be the first place to do something like that, basically using household garbage, sewage and animal wastes.

**Senator MILNE**—What would be the cost if we were to, say, go with a pilot for one remote community in Australia? What sort of government grant would be necessary to do it?

**Mr Black**—For a community of, say, 25,000 you would be looking at an overall cost of about $10 million.

**Senator MILNE**—It is achievable.

**CHAIR**—It does not seem like a lot of money really.

**Mr Black**—It does not seem like a lot of money, but to get anybody to put their hand in their pocket has always been a very difficult process.

**Senator MILNE**—Not in the nuclear industry!

**Mr Black**—Or the ethanol industry.

**CHAIR**—Did you have any more questions?

**Senator MILNE**—No, because I have to go, but I have Mr Black's details and I will think about that.

**Mr Black**—I would like to make two small points that might be of relevance to you. The first is that natural gas is the only one of the gaseous hydrocarbon type fuels that does not operate on world parity pricing. Indeed, a lot of the cost of natural gas is regulated by government. For instance, the transmission cost through pipelines is regulated. The retail price of natural gas today is 52c per cubic metre, which is equivalent to 52c a litre for diesel, 47c a litre for petrol and 32c a litre for LPG. The price has gone up since 1996 from 38c to 52c. That is 4.4c for the GST inclusion and the rest is CPI adjustments, and that is all that happens with the price of gas.

Sydney Buses, as an example, who are a huge buyer of natural gas for their buses, have a 10-year fixed price contract, which is only adjustable for CPI, and they know today what their fuel is going to cost them in 10 years time. Ask any operator on diesel, 'What are you going to be paying in 10 years time?' and they will just roll their eyes.

**Senator MILNE**—Thank you.

**CHAIR**—What, therefore, would it take to get a small vehicle fleet operating?

**Mr Black**—Guaranteed refuelling infrastructure.

**CHAIR**—You do that by getting government to invest?

**Mr Black**—Either getting government to invest or getting government to support.

**CHAIR**—To support, sorry, yes.

**Mr Black**—There is a cost. Generally, you would expect that the cost for a small refuelling facility that would do, say, 50 cars a day would be around about $350,000. To be viable in the short term—and that becomes one of the issues that we have with the gas companies, because they say, 'Look, why should we wait five years for this to be viable, when we can make that much money on the short-term money market? We don't need to be involved in that sort of business'—you would probably need a 50 per cent subsidy for the first years of the roll-out.

**CHAIR**—Thank you.

**Mr Black**—There may be other questions that you have and we would be very happy to respond to those.

**CHAIR**—Yes, I think there will be. Thank you very much. It has been very useful to get people with practical, hands on experience.

**Mr Black**—Thank you.

**Committee adjourned at 4.56 pm**