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

THURSDAY, 29 JUNE 2006

MELBOURNE

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

Thursday, 29 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 Milne, Nash, O'Brien, Siewert, Sterle and Webber

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 10.10 am

BLYTHE, Mr Sean Darrel, Chief Executive, Advanced Fuels Technology Pty 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 detail. The committee is due to report on 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.

I welcome Mr Sean Blythe from Advanced Fuels Technology. I invite you to make a brief opening statement and we will then ask you questions.

Mr Blythe—Thank you for the invitation to make a presentation to this hearing. Firstly, the alternative fuels industry is an emerging market, and within that industry globally is the natural gas vehicles industry. It is not the future; it is actually now. It is a proven and demonstrable market with over 4 million vehicles operating around the world. Our company is a member of the International Association for Natural Gas Vehicles, of which I am the treasurer. We are involved in the Asia-Pacific associations and the like. We are now up to a third generation of vehicles and technologies in this market. Unlike many of the alternative fuels, natural gas is available today. It is purely an economic and policy question, more so than 'what if?' I think it is very important for everyone to realise that. I am sure that will be borne out in my answers to your questions.

It is demonstrable. Probably the most mature market for natural gas vehicles in Australia is buses. Most states, bar Victoria, operate gas buses for very good reasons, with full OEM support from Mercedes-Benz, MAN and the like—so much so, in fact, that the experience learnt here is being applied back in Europe. For example, a lot of the large cities in Germany now are adopting the technologies that Mercedes-Benz, MAN and Scania have developed here and applied back in those markets. There are a lot of issues and history around natural gas vehicles in this country, and there was a lot of bad blood, misrepresentation or lack of performance in the past, but I think they were part of the necessary growth and learning curve that you go through in industry development.

From an Asian perspective it is important to note from the start that the Asian market—and I include the Australian market in that—is quite different from the European market. Principally the Australian and Asian markets—certainly the South-East Asian market—are technology takers more than technology setters. We need an environment that is conducive to bringing that technology into the country. There are exceptions, and perhaps we can talk about those later. From an APEC perspective, only very recently—within the last two months—there has been a policy at the APEC ministerial level to introduce an alternative fuels program with the objective of having 20 per cent of vehicles on alternative fuels by 2020. Fifty per cent of that 20 per cent are to be driven by natural gas. In essence, APEC has adopted the same program as the European Union. So, we are not alone on this. This is going to be the fuel of the future. The question is: when does the future begin and how long does it last? That is probably enough for an opening statement. I would rather go to your questions now.

Senator NASH—One of the things that you refer to in your submission is that you would like to see government consider sponsoring the development of a strategic corridor of LNG refuelling stations. What exactly do you mean by 'sponsor'?

Mr Blythe—De-risk, for want of a better term. As I say, there is technology available in the market now for the vehicles and the engines. What is lacking is a refuelling infrastructure. Large projects require capital investment in the early stages. There are different parties, different large energy companies and gas companies, looking to invest, but the problem is that they are commercial businesses and they are saying that right now they need to get a long-term payback because the infrastructure costs are high initially. If there were a de-risking of that for a finite amount of time for finite projects then they could demonstrate to on-highway use vehicles, the primary target market for liquefied natural gas, that this works. Then it becomes fully self-sustaining and self-funding. It is just that initial acceleration that is required.

Senator NASH—You are referring to financial assistance from government for the infrastructure for setting up those refuelling stations?

Mr Blythe—I am referring to some sort of incentive program—whether it be capital investment, accelerated depreciation or some other innovative solution that enables the risk scenario for those investors to be reduced or mitigated in the short term, because it is a short-term issue.

Senator NASH—How many refuelling stations would you see as being necessary along that corridor to make it viable?

Mr Blythe—Let me take one step back, because it is important to understand. In the LNG market, most of the on-highway large transport users in Australia refuel their vehicles from their depots. The very short- to medium-term future is to have refuelling on the home depots. The necessary requirement for the on-highway use is to have mid-term refuelling stops and to provide stability and security just in case something goes wrong with the depot base. That puts it in perspective. Those depot base refuelling stations really should be self-funding and should not require funding from government. It would really be for the multi fleet refuellers—the fleet anyone can use; there is public access. All that is required is probably something in the order of five to 10 stations.

Senator NASH—How far apart would they be? I guess the basic question is how far can a truck go on a tank of gas?

Mr Blythe—For LNG it is somewhere around 700 kilometres. Between 600 and 800 to 900 kilometres is the range that we think makes sense along the east coast.

Senator NASH—Is there anything you can see that government is not doing or is doing that is impeding the development of the take-up of natural gas?

Mr Blythe—One of the most important things when you are looking at change programs is security of the future scenarios. One issue that is up for challenge at the moment is the excise regime. As we know, it changes in 2010-11. It has been set but there is still an unknown as to what is going to happen in the post five-year forward planning. Fleet operators hold their fleets for somewhere between three and seven years. The infrastructure guys have a 10-year investment program. Our company has a five- to 10-year investment program for engine development and the like. It is difficult if we are not sure what the price differential will be in terms of what we can control—not what we cannot control; no-one can control diesel price and crude price, but we can control the regime under which these fuels are brought to market. That is one of the inherent strengths of natural gas—it is not linked to parity pricing like diesel and traditional fuels are.

One of the big selling opportunities to the LNG and CNG markets is that the gas companies are able to offer five- and seven-year fixed term price contracts with CPI escalation. That is extraordinarily attractive to a fleet operator who is running on margins of less than 1c per kilometre. The big risk right now, I would say, is the excise regime; that is No.1. What is helping the industry right now is the Alternative Fuels Conversion Program. It certainly does de-risk it from a fleet-user perspective.

It is not simply about saying, 'Here is an engine that works.' It is about implementing that fuel and that vehicle into that fleet user's fleet. So, when people say, 'The engines work, so you don't need funding anymore,' I am afraid to say that there still are risks and costs being borne by the fleet user. You need to make sure the workshops are adequately staffed and kitted out. You need to make sure that the infrastructure works and that people actually endorse the programs. You need only to look at the bus companies to see a real-life example of that. They are now over that curve; and now they are all looking to buy new gas buses. But the reason they were able to do that is that there was a lot of support by the state governments, I would say. There was support by the federal government in the Diesel and Alternative Fuels Grants Scheme and the Alternative Fuels Conversion Program. Those programs have a finite life—we totally accept that as an industry—but there is a role for them in the short term, which is to get across that little hurdle of people saying: 'I do not know that fuel. I like diesel and traditional fuels.'

Senator NASH—In the trucking industry, for example, what are the barriers that you see they are thinking of in terms of why they would not switch to gas? Obviously, the refuelling capability is one of them. Are there any other barriers that the industry sees as to why they would not want to switch over to gas?

Mr Blythe—There are a few issues. But, ultimately, the one reason why they do it is that they save money. This is an economic question, principally, for the end user. There are certain

organisations, which I would class as very premium, that value the greenhouse benefits and the urban air quality benefits. Boral is buying some gas trucks now. And some of the bus companies are saying, 'Wait a minute—this is more than just running and operating costs.' In a carbon constrained environment, it is actually about asking: 'Do we have a competitive advantage? Are we impacting? Are we leaving a footprint?' There are air quality issues and so on.

So, principally, the major deterrent is the capital cost required and the initial step to have a go at alternative fuels. I think that is the issue. There are examples. Murray Goulburn is a very good example. They have a fleet in the order of 150 vehicles in Victoria. They have converted in the order of 30 of them to liquefied natural gas. They are very happy with the programs. They are now committed, publicly, to converting their whole fleet to natural gas. That is a unique cooperative environment, but you can see that, with the funding of the first 15 or 20 vehicles, they have said: 'Wait a minute—this is good environmentally and socially and is actually good for our hip pocket. We want to do it.' So it is de-risking the capital hurdle required.

The third issue is the hurdle for the infrastructure investment. It is one thing for a small customer to say, 'Yes, I want to buy some trucks and do this.' There is a minimum investment required from the infrastructure, whether it be a compressed natural gas compressor station or a liquefied natural gas dispensing unit. There is a minimum number that is required. Until you get some economies below, probably, 10 vehicles, there is a level at which the economics are questionable for the refuelling provider. That is why in our submission we suggest that there is some logic and good benefits to come from supporting some depot based small dispensing stations for LNG or compression stations for CNG. Once you get the numbers in the market, it will take off, because this is not a technology question; this is a commercial question.

Senator STERLE—Mr Blythe, what are the two main properties in natural gas?

Mr Blythe—Components?

Senator STERLE—Yes.

Mr Blythe—Principally, it is methane, which is CH_4. It is the lowest carbon intensive fuel in methane. It is a fossil fuel—we are not going to argue that—but it is definitely the lowest emitting fossil fuel. As I am sure you are aware, there was a well to wheel analysis done in the late 1990s by CSIRO. Things have moved on since then but, notwithstanding that, natural gas—whether it be compressed natural gas or liquefied natural gas—comes out very well in that scenario. If you look from a tailpipe perspective, ignoring down the value chain of production, it also produces very good benefits, especially for high horse powered, on-highway use vehicles. The one other thing we spoke about very briefly in our submission is that, if you look at Sweden, for example, they have a very strong biogas industry—as they call it—and it is methane from either landfill reclamation or digestation. We think this is an absolute no-brainer for Australia. It is proven to work and then, all of a sudden, natural gas becomes a renewable fuel, because those processes are renewable.

The other night I was watching a television program on Japan, where a little council in Japan bought two Isuzu trucks dedicated from the OEM. They installed a bacterial digestation plant. Those two trucks entirely run from the gas they reclaim and digest from the refuse they collect.

So it is not going to be the mass, but we may be able to get to a point where maybe five or 10 per cent of the natural gas will be renewable. It can be blended. It is all a positive step.

Senator STERLE—So the truck is always empty?

Mr Blythe—Gas is lighter than air, but I hear what you are saying.

Senator STERLE—What else is there?

Mr Blythe—It can go from 100 per cent methane, which is rare, down to about 85 per cent methane, and that is set by the Australian standard. Then there is normally a little bit of CO_2—maybe two or three per cent maximum. There is a bit of ethane, which is C_2H8_8 and then some trace elements or some other things—a bit of water, a bit of sulfide sometimes.

Senator STERLE—This committee was in Sydney not long ago and we had a summary from some gas people and they were talking about propane. Where does that come into it? What is that one?

Mr Blythe—Propane is a liquefied petroleum gas. In Australia is called autogas. It is a blend of fifty-fifty propane and butane. Principally LPG comes as a by-product of natural gas production or as a by-product of petroleum refining. I do not like to talk about other fuels—our business is involved in LPG—but one of the challenges of LPG as a market is that it still has parity pricing. It is linked to global markets, whereas natural gas is decoupled.

Senator STERLE—My apologies, I got the wrong fuel. You do not deal in LPG conversions?

Mr Blythe—My company does, but principally for cars. It is not seen as a fuel for commercial heavy vehicles.

Senator STERLE—Can I still ask you a question on LPG?

Mr Blythe—Absolutely.

Senator STERLE—We were led to believe that the percentages of propane and butane can be different each time. It is not set percentage.

Mr Blythe—Absolutely. Autogas can have up to 40 per cent butane in it, so it ranges from 100 per cent propane to 60 per cent propane and 40 per cent butane.

Senator STERLE—So why are there differences in the percentages of propane and butane?

Mr Blythe—Again I have to backtrack just a touch. You probably have an understanding of how the LPG industry came about. It came about because the refiners were purging the stuff—the flame you see down at the Shell refineries. That is LPG. Probably 25 to 30 years ago some bright spark said: 'Wait a minute, why are we burning this? Let us put this to some good use.' Companies like Clean Heat, Wesfarmers, Boral Gas, Heatane in Victoria, SAGASCO in South Australia, all said: 'Wait a minute, there is a business here. How do we make this work?' Caltex had the gas—they had access to it because it was their fuel—and they said, 'How do we make

this work?' Because each market derives its fuel pretty much from different sources, there is a variable content in the gas.

Senator STERLE—So what was a waste before is now a saleable product.

Mr Blythe—Absolutely.

Senator STERLE—In terms of performance of the engine, if there is a higher component of propane or butane, does that affect the greenhouse gas emissions?

Mr Blythe—Yes, it will, absolutely.

Senator STERLE—Does it affect the performance of the vehicle?

Mr Blythe—Yes, it will. The guy next to me will know more about this than I will, but certainly the fuel that goes in affects the combustion characteristics, the engine performance and the whole lot. This is not an issue for natural gas, because natural gas is very tightly controlled. It is pretty much—plus or minus five per cent—90 per cent methane wherever you go in Australia. It is very tightly controlled, not so much for the LNG vehicle industry or the CNG industry; it is controlled because that same gas goes into your cookers at home and you cannot have variability of fuel going into your home. You have got to set the gas composition to meet the needs of the most vulnerable in society. Because natural gas is expanding from traditional uses in commercial and domestic areas into transport, a lot of that work is already done. Unlike LPG, from a vehicle fuel point of view we have said that this is a particular fuel for a particular market that has had its own distribution network and its own dispensing, and they are able to accommodate those vagaries.

Senator STERLE—That has been very helpful, thank you.

Senator MILNE—As Senator Sterle said, we have heard evidence both in Western Australia and in Sydney relating to natural gas and the problems associated with a lack of a distribution network. You would have been aware of the legislation that went through the Senate last week; some of us are of the view that it will significantly disadvantage alternative fuels and so on. You have talked today about the need for a policy framework in terms of government incentives and so on. One thing that seems to have emerged is that there is not a policy for the whole alternative fuels sector and, as a result, each sector argues its case, each putting forward different scenarios for how it would be advantaged or disadvantaged in an alternative fuel scenario. That makes it very difficult for legislators to come up with a package which recognises that there is a role for all the alternative fuels in some sort of mix. In view of the legislation that has just gone through and the fact that it is proven technology but there is no distribution network, what is the major thing that could happen now that would really give natural gas what it needs to get going? We heard in Sydney that some of the existing depots are being pulled out. Boral made the point to us that they have had to put their own in et cetera. They are okay because they have a big fleet, but for small fleets and for ordinary people and even for government car fleets the absence of a distribution network seems to be the key. Can you confirm whether that is the main inhibiting factor, in spite of whatever the excise et cetera might be? How do we go about that in the current environment? What is your proposal to fix it?

Mr Blythe—Firstly, we do not need to recreate the wheel here. There is good policy around in the European Union and now on the table at APEC that accommodates the breadth of the alternative fuels industry. All we need to do is look at it and say, 'That makes some sense,' and tweak the numbers and say yes. As I said, in the European Union it is called the 20/20 plan, which suggests and promotes—in fact it is legislated—that 20 per cent of vehicles will operate on alternative fuels by 2020. Ten per cent of the fleet will be natural gas powered, eight per cent will be biofuels powered and two per cent will be hydrogen powered.

Senator NASH—How did they arrive at those figures?

Mr Blythe—They had their EC working groups—years of work, in reality, and a lot of lobbying by a lot of industries. But the upshot of it is that the work has been done in the markets, where a lot of the technology is developed, I would have to say, for these programs. From an Australian perspective, APEC have adopted a similar policy and are writing their own. It will be entirely consistent with the European policy. They have said: 'Wait a minute. If that makes sense for the Europeans, we are technology takers so we will be consistent.' From a policy perspective, I absolutely think there should be some targets set. We do not need to recreate the targets. We can simply look and see how they fit Australia and say, 'Let's use a similar forum.' There are lots of people who know a lot more about that than I do, and we can certainly provide some information on that, if you want.

That policy presents an investment future for companies like my own and for companies like the large OEMs—the Cumminses, the Caterpillars and the Isuzus. These guys say: 'Wait a minute. There is a program and I already have that product available in the US,' or 'I've already got that available in Japan.' These guys do not bring these in for one unit. They need to have a 10-year or five-year plan for spares, parts and technology, because it is a lot of work to bring a new engine into this country. Once an engine is on the road, it needs to be adequately supported by a dealer network—the parts, the warranty. They do not think: 'Yes, it's available. There's some gas, let's bring it in.' Someone has to be very brave to do that. Fortunately, we have some industries and some participants in the engine industry that have already done that. You will hear soon from one such industry company that has done that, Cummins. But there are others; Isuzu have done it as well. That program, that policy or that targeted framework enables people and organisations of a global nature to say, 'Yes, this is an environment in which we can invest.' That is from a global technology-taking perspective, which is principally the engine side.

The distribution network side is more a domestic Australian issue, where Australian companies ask, 'Is there an opportunity here for us to make some money in the long term and create a sustainable business?' That can come about two ways. One is where they say: 'Yes, the government are saying that they are going to write policies. We don't know what they're going to be yet, but they're going to write programs and underpin that policy with some demonstrable programs that will enable us to reach those 2020 goals,' for example. Some of those may well help to 'Australianise' technology to work with the OEMs or other innovative businesses that are looking to develop engine technologies for the Australian market. That is one of our points about gas engine technology, which is very important. Customers have to be given choice.

One of the nuances of the fleet industry in Australia is that—though this is changing a little as we go forward, because of the availability of engines—if you are a Caterpillar fleet, you keep buying Caterpillar engines. If you are a Cummins fleet, you keep buying Cummins engines.

Historically, there tended to be quite a large degree of commitment to a particular type. We are seeing a need to bring that technology to market. How do you do it? You support it in terms of perhaps some finite, very targeted programs that enable people to invest in that technology. That is No. 1. No. 2 is the idea of underwriting some investment in infrastructure. Whether it be depot based infrastructure or on-highway use infrastructure, they are actually servicing the same market but at different times of the growth phase.

You mentioned Boral as an example. We are familiar with that project—in fact, the vehicles involved in that program. The reason for the change in infrastructure at a few of the public stations in New South Wales is that it just does not currently fit with the gas industry strategy, given that there is no longer a gas industry in Australia. We have all seen the reregulation and deregulation of that industry on a state-by-state basis. It really has eroded the ability of the traditional gas companies, not the merchant gas companies, to operate. I define the merchant gas companies as the Kleenheats, the BOCs and the Lindes, as opposed to the traditional gas companies such as Origin Energy, TRUenergy and AGL. Those guys have a very clear regime. And it is no basis for them to make money; right now there are no real incentives in the way the gas industry is regulated to do that. Notwithstanding that, that does not mean other people will not do it.

My company is looking to invest in depot based refuelling, whether it be LNG or CNG. One of the consequences of the deregulation of the gas market is that we can get gas from any of those retailers. It shifts the investment onto us, not them. If a customer like Boral came to us and said, 'We want 30 trucks on this in that depot,' we would absolutely look at putting together a total bundled solution to offer them a refuelling program. The challenge is that they do not ask for 30; they ask for five, and that is where the targeted approach needs to be. So, when they ask for five, it is a bit too hard for companies like us and for most companies to swallow. But it will not be too long after the initial request for five that they say, 'Actually, we're going to put a fleet of 150 on it.' When it gets to 150 or anywhere above 20 or 30 vehicles, the numbers stack up by themselves. That is why, in the short term—and I am talking about less than a three-year time frame—there needs to be some targeted depot based refuelling support. As I see it, they are the two issues.

Senator MILNE—If there is not, do you have a future?

Mr Blythe—It is a real challenge for my company. In a company like ours, whose whole future is alternative fuels and natural gas vehicles, yes, it is a real challenge. We work in South-East Asia, so we will say, 'We won't focus on Australia; we'll shift our focus.' We have contracts with Petronas and PTT in Thailand; we are already working up there. It is not our core business; our core business is as an Australian company to make this work in Australia, but if we cannot we will shift our focus, because it needs it.

Senator MILNE—So it is similar, in a way, to the renewable energy industries, where without MRET they are going offshore too.

Mr Blythe—Yes; you have to survive.

Senator MILNE—That is right. I am not criticising them; I am just saying that the current policy framework reality in Australia is driving innovation offshore.

Mr Blythe—Absolutely. Our company knows how to do this, and there are other companies like us who know what they are doing. In fact, we are seen as an OEM in South-East Asia. Whereas we are seen as a small fish in this market and we work with the OEMs here, in those markets we are seen as an expert and as a very valued partner. It would be ironic if we could not make it work in this country because, in essence, of the regimes.

Senator MILNE—Sure.

Senator WEBBER—I want to return to your first point where you talk about setting a target of 10 to 15 per cent of all new commercial vehicles being powered by gaseous fuels. You say that is reasonable. Can you tell me how you arrived at that figure? You say in your point that there is a target for biofuel in Australia. Leaving aside Senator Milne's concerns about legislation that has been passed and the impact that that is going to have on the biofuel industries, there has been argument that in fact the target that has been set for biofuels is too low. How reasonable is the 10 to 15 per cent? Do those targets actually become inhibiting?

Mr Blythe—I had better just clarify something. The targets I set are not what I am proposing for Australia. I am saying that they are in place, they are working and they are stimulating investment in Europe—we know that. There was a target in Europe, which was 2020. In its initial form it was 10 per cent natural gas, five per cent hydrogen and five per cent biofuels. It has been revised recently to be 10 per cent natural gas, eight per cent biofuels and two per cent hydrogen in recognition that hydrogen is still a fair way away and no-one wants to set themselves up for failure. I do not particularly want to talk about biofuels or hydrogen other than to say that they are out there and that there is a role for all alternative fuels in this market. The issue we would like to focus on is the implementation of natural gas. A huge amount of work has not been done on what that 10 per cent should like, and I would suggest that there is a body of work to be done. But, given that they are the numbers that have been set by Europe and APEC, from a technology perspective bringing it into market should not be a challenge for us. We bring our product from Europe, the USA and Asia, and the OEMs in those markets are responding already to the policies of the European community. It is those OEMs—to invest in this market and bring the product that already many are working on and have available in this market—that need to see a policy framework. We think that 10 to 15 per cent is not unreasonable in terms of the program.

Senator WEBBER—My point was: how easily achievable is that? My concern is that, when we have long-term targets, they tend to be the ceiling—once we hit them we do not seem to go any further.

Mr Blythe—There is actually a quite clear body of evidence that says this industry is self-sustaining. It is quite an entrepreneurial industry once it gets beyond that critical mass. Germany is probably a key market. Argentina would be a key market. In those markets it really is a self-funding commercial business that is just flying now. As for how it got into those markets, in South America it was about price differential and also policy security. Price differential itself did not make it go. It was the price differential between the US dollar and then their crude imports from North America. Equally, it was the government saying, 'We're going to support this industry and we're not going to get in its way.' In Germany it is the same situation. There were incentives in Germany, though, where they are putting in 1,000 public refuelling stations. But that is a strategic perspective. They have said, 'We've got domestic gas; we've got good supply,'

so it was more those broader macroeconomic impacts as well as the very Green influence in the German parliament that got that going—which we think is a very good program to look at.

Senator O'BRIEN—I have a couple of questions. What is the difference between CNG and LNG in terms of efficiency?

Mr Blythe—The engine does not really know the difference between compressed natural gas and liquefied natural gas. The difference is the way in which the gas is stored on the vehicle. Compressed natural gas has benefits in certain markets, because all you are doing is taking the gas out of the pipeline, compressing it for storage and putting it in the vehicle as a gas. In fact, we have got one at our plant. It is a little unit that could be at home and could directly refuel cars. So, where the infrastructure exists, as in the gas pipelines, and the range required is not too far, CNG is an ideal fuel for that market, particularly buses when they return to base and refuse trucks when they return to base. As for the agitators for Boral, return-to-base inner-city environments are lay-down misere for natural gas, as in compressed natural gas.

Liquefied natural gas is still pipeline gas but it goes into a liquefaction plant. It is then trucked to a dispenser, much like a liquid fuel is, and it is dispensed by a liquid pump from a dispenser at a depot, whether it be public or otherwise, into a liquid tank on the vehicle. In going from the liquid tank it is vaporised on the vehicle—it goes through a heat exchanger—and it goes into the engine as a gas. The gas that the engine sees is pretty much the same, whether it be stored as LNG, liquefied natural gas, or CNG, compressed natural gas. The principal difference, from a customer's perspective, is that LNG gives three times or thereabouts—it is probably 2½ times—the range for the same volume. So for on-highway use from Melbourne to Sydney, LNG is the answer; for intracity, it is more CNG—but there will be a blend.

Senator NASH—Is there any cost difference?

Mr Blythe—Their costs are actually very similar. You need more CNG cylinders per vehicle but they are cheaper, so it is pretty much a wash actually. As for the pricing, we understand that with the gas companies, whether it be the LNG guys or the gas company guys, they are pretty close. But you are talking half-price fuel here. You are talking about something that is sustainable in its own right if we can get over that little hurdle.

Senator O'BRIEN—Is there potential for cooperative refuelling stations?

Mr Blythe—Absolutely.

Senator O'BRIEN—Who would need to drive that?

Mr Blythe—Cooperative, as in third-party accessible—is that what you mean?

Senator O'BRIEN—It may not be. One thing is that you are talking about businesses wanting to start with five units, not 30 units.

Mr Blythe—There is scope to do that. One of the interesting things you see if you look at the CNG side—and it was looked at—is that a lot of the bus companies in each city have large compression stations sitting there. If this market goes, I can see there being someone who is

smart enough to negotiate a deal so that they put a dispenser adjacent to the bus companies—if the land is available and they can make it right. Otherwise, you might have new sites where the baseload may be with a large customer and they also retail some gas across the fence. There are weights and measures and all those sorts of issues but I think the logic is that there will be third-party accessible sites.

They work all around the world. In Europe at least 50 per cent of the stations are on the forecourt. It is not a technology issue; it is purely driven by whether the customers are willing to have their competitors come and refuel at their site. It is more a competitive tension issue than anything else, but there is no reason why it cannot work. We would argue that it is in its infancy, at which stage it is actually a requirement to have some shared, accessible sites—whether it be via a swipe card or whatever the case may be. For example, those LNG sites up the highway that we were talking about before would definitely be third-party accessible sites, otherwise how would they create the greater good?

Senator O'BRIEN—I presume this is feasible. What would it cost to convert a large family sedan to CNG?

Mr Blythe—In most countries—and I do not want to talk down the LPG industry—cars are converting to natural gas, not LPG, principally because the fuel is cheaper, it is available and it is notionally a more workable fuel in the engine. But for spark ignition engine cars it can go either way. Principally the technology is the same as propane engines or autogas. The difference is that the CNG cylinders are more expensive because they are at a higher pressure and because of the running gear. So if an LPG conversion was costing you $2½ thousand then a natural gas conversion would probably be about $3½ thousand. It is more, but you have to understand that in the longer term it always gives a pay back because the price of the gas is locked in. It does not go up and down like the pump price.

I do not want to go into too much detail, but the price of propane use LPG that you see on the board at a refuelling station cannot be equated with the price of petrol, because the energy content in one litre of LPG is less than that in one litre of petrol. They have been fortunate to be able to market it that way for a long time, and I do not particularly want to get into that, but for natural gas that is not the case. The energy equivalence is pretty much one for one, so one cubic metre of natural gas is equivalent to one litre of diesel or thereabouts, and to more than one litre of petrol. It is a viable market. It is already commercial. The issue is why people would spend that money when the infrastructure is not there and the LPG infrastructure is there already. So we totally support the LPG market in that respect. You have 2,000-odd refuelling stations focusing on light family vehicles and light commercial vehicles, and so be it.

Senator O'BRIEN—What approaches have been made to the motoring clubs about work that they could do for their members if these fuel conversions are so economically viable as to save their members significant dollars?

Mr Blythe—I am not aware of many recently because, really, the industry itself is targeting heavy commercial, professional users.

Senator O'BRIEN—But it is the volume of users that makes these stations more viable. That is why I asked the question.

Mr Blythe—Absolutely. I think it is very difficult to see the car market underwriting the investment required. Firstly, LNG is not really for cars; LNG is for commercial vehicles, just due to the nature of the fuel. Compressed natural gas is available for cars. My company is developing some technology with an Italian company for small compressors to do small car fleets. We expect that there will be some cars done on natural gas. It may be 500, 1,000 or 2,000—it will slowly grow. But we need to invest to develop the technology to make that meet the ADRs and those sorts of issues. We are committed to doing that; it is what we do. But it is not the volume market like LPG is right now.

We see it as important. For example, let us just say a council fleet puts their refuse trucks on natural gas. They buy, say, an Iveco truck with a Cummins gas engine in it. That is full OEM, fully available on the price list and there it is. If they have a refuelling station on their depot then why wouldn't half the council cars also convert to natural gas? So it is seen as a very good market to come in under if the infrastructure is already available. We do not see it actually as driving the infrastructure itself—not yet. It does in other countries, but that is because other countries are doing thousands of conversions a month, not the numbers that we are talking about.

As for the motoring bodies—for example, let us look at the RACV perspective. In Victoria the legislation for alternative fuels, natural gas and LPG, is controlled by the AAFRB—that is, the Australian Automotive Alternative Fuels Registration Board—and one person on that board is an RACV delegate. The role they play is about regulation, training, service and maintenance and those sorts of issues more than leading it at the moment.

Senator NASH—With the autogas, who are the major suppliers?

Mr Blythe—Of the fuel itself?

Senator NASH—Yes.

Mr Blythe—It is pretty much the oil majors.

Senator NASH—It is? I ask that in the context of the refuelling stations. It is a bit chicken and egg: until you get it out there people cannot actually use it, hence your suggestion about there needing to be something to have those refuelling stations there. It occurred to me that, obviously, there are a lot of autogas outlets and things out there, and that is why: they are obviously linked to the majors, whereas this other is not.

Mr Blythe—It flows onto the question: why would those guys let natural gas come on if they are not making money?

Senator NASH—The same as biofuels.

Mr Blythe—No, there is a difference. The answer is very simple: why do refuelling forecourt operators have a car wash? Because they make more money out of the car wash than they do from retailing fuel. As long as there is a pay-off, they will do this. There has already been negotiation between the major guys saying: 'Sure, put a dispenser there. There's some land over there.' It is not an easy negotiation but if they see a dollar in it per unit of fuel sold then they will do it. We are confident of that. It is not a broad experience, but there is a 7-Eleven in Sydney that

has got one, there is a Shell station in Adelaide that has one, and there will be others. At the end of day, these guys want to make money and if they see a return they will do it. It is not like the propane side where they are making money on fuel production, distribution and retail.

CHAIR—There is an energy penalty associated with liquefying natural gas at the refuelling points. Is that correct?

Mr Blythe—Yes, there is, because natural gas is a feed-stop fuel. The best analogy is: natural gas to your home goes through a gas meter into your appliance and you just burn it. At a refuelling station, whether it be a public forecourt or a depot, gas goes into a little compressor. Imagine an air compressor: it is a similar system—much higher pressure—but, in essence, that is the energy, so there is an energy component required to compress that gas. It is a reciprocating depressor. It pumps it up into a storage bank and then, pretty much by itself, because of the pressure differential, it fuels the vehicle. Those compression costs have been modelled in the well to wheel analysis by the CSIRO.

CHAIR—How does that compare to other fuels?

Mr Blythe—Very well, and it is getting better because natural gas is often available at a higher pressure. Generally, the numbers modelled in that CSIRO report assume a very low gas pressure at the main, but a lot of the sites we are looking to work with have a higher pressure. If you have got 20 bar gas as opposed to one bar gas and you have to take it to 200 bar, there is a substantial energy reduction required. Historically, that was not available because the compressing stations were not able to take that high pressure gas, so you lost that energy. Now we are seeing stations—and we are involved in it—that can take the gas at a higher unit pressure to the compressor.

In fact, the CSIRO report is well and truly a historical view of this market. It is about energy. Principally, around the world the people who drive this market are the energy companies. Energy companies hate wasting fuel. They say: 'Hey guys, if I've got a gas pipeline running down there and it's really high pressure, but you want me to put in your compressor and it can only take that? Come on! If you want to work with us, make sure you can give us a product which takes the gas pressure.' And that has been done. In my previous role, I ran a compressor company in the UK that did this, so I am very confident that the numbers in the CSIRO report understate the greenhouse benefits of compressed natural gas. They also understate the LNG benefits, because the technology being modelled in that CSIRO report is not the technology that companies like Kleenheat are applying in this market; they are substantially 'next generation' in what is being modelled. It is actually a brighter future than what is being predicted.

CHAIR—Thank you. I think we will have to wrap it up.

Mr Blythe—Thank you.

[11.00 am]

BORTOLUSSI, Mr John Murray, Director, Engineering, Cummins Engine Company Pty Ltd

CHAIR—Welcome, Mr Bortolussi. If you would like to give us a short opening statement, you may, and then we will get into some questions.

Mr Bortolussi—Thank you. Cummins is the company I work for. We have a fairly long history in alternative fuels in Australia—over 15 to 20 years—whereby, for heavy-duty transport needs, we have been working in that market from the early experimental days through to today. We also have a significant investment in joint venture companies and now we have a successful product line that has around 12,000 units operating around the world. The Australian market is less developed for Cummins than other markets we have, for a lot of the reasons that I suppose you have been talking about this morning.

I would like to add to a couple of points that I heard come out this morning. One was around vehicle reliability. In the 20 years or so that we have been working in the marketplace, it has improved substantially. We are now on the third generation of product. Some of the early forays of Cummins into the truck market, as early as 1996 with our Cummins OEM product, were not that successful from a reliability point of view, which is the chief motivator for a trucking fleet. But time has moved on since then. The other thing that still exists from a reliability point of view is the aftermarket conversions by smaller companies, not OEM channels. They continue to create the warranty and service support issues. So we advocate OEM technology over aftermarket. Certainly our position is that any government investment should be through the OEM manufacture and support channels.

The other thing I heard was about the different sorts of alternative fuels and the question of which alternative fuel to back. I am a member of the Fuel Standards Consultative Committee and we oversee the Fuel Quality Standards Act. A big part of that is assessing alternative fuels. The act covers a number of alternative fuels, whether they be biodiesel or diesohol. So I have visibility across those various fuels. We had the biofuels task force, which set the target of 350 million litres, which is really around one per cent of the petrol and diesel usage for Australians. It is a very small component. When we talk about alternative fuels, we can talk about LNG, CNG, biodiesel, ethanol and diesohol, but they are only small substitutions. It is really natural gas that provides the higher levels of substitution that can make a significant dint in the existing petrol and diesel consumption and has the market-ready technology now, at that third generation of product. Those are some of the opening comments I wanted to make.

CHAIR—Thank you.

Senator MILNE—Thanks. I would like to ask about resistance in the heavy transport sector. Obviously, what you are saying is similar to what others have been saying: there needs to be a policy framework to encourage a transition, target setting and so on. We do not have that. You said you were working on this around the world and in Australia; do you find that there is a

cultural resistance, if you like, from heavy vehicle users of diesel to the notion of changing over? Or is the barrier purely the cost disincentive?

Mr Bortolussi—There are a number of influences in there. Cost is obviously one thing, but the biggest single driver for a trucking operation is reliability. They must have reliable units to do the operation; they do not have spare vehicles sitting around waiting for a vehicle to become unreliable. To date we have had a number of issues in the marketplace, where the reliability has not been where it needs to be. So cost is one thing—the surety of the cost of fuel going forward. We have an excise scheme now in place. The ability of the operator to sell the vehicle in five or seven years time and actually get a decent residual value for the vehicle in a marketplace that is undetermined is another factor. The fuelling infrastructure has been well canvassed already this morning. So it is all those sorts of things, and there are probably a few others that we could throw in there as well, that create the ability for a trucking company to migrate to natural gas.

Your question was about whether there was a cultural barrier. From all the customers that I talk to, I do not consider there to be any cultural barrier as such. Everything comes down to dollars and cents. As far as a trucking operator is concerned, he is not emotionally attached to one fuel or another, but he does have an operation to run. With ever-increasing, tighter margins at the moment, he is looking for any way to increase his margins and keep his company viable.

Senator MILNE—In terms of reliability, are you referring to the distribution network? What other factors make it unreliable?

Mr Bortolussi—Probably vehicle operation is the thing I was referring to. Does the truck go out in the morning with a load on the back and come home reliably? Does it make the required distance with the fuel? Does he have an excessive number of breakdowns? Is he caught on the side of the road and have to get towed somewhere? Does a load of frozen goods have to be offloaded onto another vehicle? Trucking companies just hate unreliable vehicle operation.

Senator NASH—Can that be as a result of the fuel—is that what you mean?

Mr Bortolussi—It can be, but it is to a lesser extent.

Senator NASH—Senator Milne's question was about the barriers, and when you were talking about reliability I think the barriers were in terms of the gas itself. Is that right?

Senator MILNE—You are talking about embedded energy and the capacity to go a certain distance and come back reliably.

Mr Bortolussi—I am talking about the guy driving the truck, and the truck actually does the job. That is what I was referring to there.

Senator NASH—Okay.

Senator MILNE—What are the benefits of switching from using diesel in a heavy vehicle to using natural gas in terms of greenhouse emissions and particulates?

Mr Bortolussi—On the greenhouse front, the AGO will not allow you to do it. Unless you prove a five per cent improvement, they will not give you the 50 per cent funding. That is the target that has always existed. Achieving the five per cent is doable. The maximum you can really get to, theoretically, is I think around 30 per cent if you run a 100 per cent natural gas engine. So the target is somewhere in that range. On a PM range, the diesel standards now are really catching up to where the particulate levels were on the gas engines. So over the next three to four years we are going to go through a range of ADRs which are going to pretty much bring the particulate levels down to where the natural gas engines are fundamentally capable.

Senator O'BRIEN—They are supposed to. It has not been confirmed that they will yet.

Mr Bortolussi—The real benefit will come in 2010 or 2011 with the ADR II. You are right—that has not been cemented at this point in time. The differential between diesel and gas on a PM standard is reducing. I could provide more information and give you some better numbers.

Senator MILNE—I would be interested if you could provide those to the committee. That is a significant consideration.

Mr Bortolussi—Yes. The PM question is really the one you want to focus in on there.

Senator MILNE—And the CO_2. It is both particulate and CO_2. Thank you.

Senator STERLE—We had a submission from one of your major clients. They were really excited about putting five of your new 400-plus horsepower motors into their agitators in New South Wales. I think we asked a question about the price difference between a conventional diesel engine with a certain horsepower and a gas one. I think we were told that there would be about a $30,000 difference. Would that be right?

Mr Bortolussi—I assume that you are talking about Boral.

Senator STERLE—Yes.

Mr Blythe—They do not actually buy the engine; they buy the truck. So the price of all of the components that you get is washed up into a truck price. Normally our pricing of an engine is really disclosed through the truck manufacturer as opposed to the end user and user customer. By the time Boral see it, they see a $40,000, $50,000 or $70,000 truck price increase, which includes all of the associated components plus all of the additional engineering effort for low-volume manufacture that is where we are at today. If you are after specific engine cost differences, I can provide that on a more confidential basis.

Senator STERLE—If you could, I would appreciate it. To give credit where credit is due, Boral is part of the greenhouse gas emissions working group. A multinational like Boral can afford to subsidise that extra cost to try to achieve some greenhouse gas emissions that are lower than normal. But for your average small to medium trucking operator, there really is no incentive for them, cost-wise, to convert to gas. What I am leading to is that, from where major engine manufacturers sit—and whether it is diesel or gas is probably neither here nor there—there has to be some form of incentive for the trucking industry to grab hold of these new engines with two hands, because on a pure dollar argument it is just not going to happen. Governments can

espouse doing all sorts of wonderful things but, unless they step forward and become part of the solution economically or through subsidies or whatever, it is just not going to get off the ground. Please tell me that I am wrong.

Mr Bortolussi—No, you are not wrong, but there is another part of it which I can help with. It is true that a lot of the success, with, say, the Cummins engines around the world has been driven by federal, local or state governments. They drive legislation that drives for gas engines. That has happened in California and they have been very successful in China. So that has been the key driver. In our marketplace it is mostly an economic thing, although you could argue that in the Boral case it is not really an economic driver. They need to do certain things for their visibility to the marketplace et cetera. The real question you need to ask yourself to get to the nub of that answer is how much fuel the vehicle needs to use to drive a payback. The typical agitator might do 30,000 or 40,000 kilometres a year. They do not use a lot of fuel. Most of where we see a large fuel usage for the urban vehicle is the waste compaction vehicle. They tend to use about one litre of diesel per kilometre. They are large consumers of fuel. A lot of other urban trucks of 30,000 to 50,000 kilometres a year are just not high consumers of fuel. At the moment, though, the price difference between gas and diesel is getting larger and larger. Over a period of time there will be a sufficient margin to drive that equation in the right direction.

That is the urban scene, but a lot of the push we are getting is from the higher fuel consuming customers who run line-haul operations. We have a fairly well-cemented product range up to 300 horsepower, which is what Boral is using, but in the 400 to 500 horsepower range, for interstate haulage, we do not really have a product ready to market at the moment. These are the operations that do 1.6 to two kilometres per litre in 250,000 to 400,000 kilometre-a-year operations. They are the ones that can do the maths fairly quickly as long as there is infrastructure and a reliable product. Does that answer your question?

Senator STERLE—It does, unfortunately. When we talk about reducing greenhouse gas emissions through the trucking industry and the like—line haul and heavy freight—there are a myriad other problems with the amount of fuel that can be carted. I know there was a trial in Western Australia with a mob called Mitchell's Logistics. I do not know if that is coming on.

Mr Bortolussi—No, they are Caterpillar powered.

Senator STERLE—I went down and saw it and asked them about it. There is no incentive for them to bounce. The Western Australian government subsidised that.

Mr Bortolussi—Did you talk to Sands while you were over there?

Senator STERLE—No, I did not.

Mr Bortolussi—Sands have been operating Caterpillar products over there for some time. They run north from Perth in a dual-fuel operation so that, if they run out of fuel, they can get home on diesel.

Senator STERLE—How many gas engines does Cummins have operational in Australia—interstate and locally?

Mr Bortolussi—We have about eight LPG units—I commented earlier about LPG and smaller operations—and we have less than 20 natural gas units, including the Boral units.

Senator STERLE—So they are not knocking down the door to get at these motors? With the way things are structured at the moment—and I will not harp on this—the transport industry in Australia is not going to convert to gas for the betterment of what we are pumping into the air.

Mr Bortolussi—The majority of transport operators are not concerned about what gets pumped into the air.

Senator STERLE—I used to be.

Mr Bortolussi—But we have had success stories in past weeks. We are at the cusp. We have Murray Goulburn doing a 30-unit operation in regional Victoria and we have the Sands units out there. We have about eight 280-horsepower units running on LNG in waste compaction units in Perth, and the reliability of those units has been proven. Iveco trucks, as part of the Boral exercise, are now producing a downline OEM-available vehicle. It has been a big issue for the Australian trucking industry to have the ability to place an order on a vehicle through the OEM, through the full dealer channel, and that is another hurdle that is out of the way. So, yes, a lot of things are changing that keep edging us towards a more viable market situation.

Senator O'BRIEN—Are you suggesting that, if we are going to expand the use of compressed or liquefied natural gas vehicles in the market, the government needs to do something to its policy settings?

Mr Bortolussi—Yes. I refer to the comments that Sean Blythe made earlier. Every country is out there trying to make investments based on the return on investment. We are no different and other companies are no different. I have spoken a bit about the trucking operators already. There are currently a lot of issues in the marketplace that we as a company with 1,400 people and a $500 million turnover in this territory have to face. We have small pockets of gas operators who want to experiment. This is still largely in the experimental phase. It is expensive to have the right training, tooling and investment in a number of different places. It is expensive to send our technicians on training courses of 40 to 80 hours so that they can work on a vehicle, when we can employ those people to work on diesel powered vehicles. There are a lot of costs that we have to bear.

The other dynamic at the moment is that we as an industry are totally stretched on available resources in terms of people. That is no news, really; it is reported just about every day in the press that we cannot get enough people in our organisation to do the work that we have. When we do get those people we can apply them in the mining industry that is going gang busters at the moment.

So there are a lot of competing issues in terms of resources. Our shareholders keep pushing us for more and more return. We said in our submission that we still see there is a need to provide the right incentives to kick us over the line properly and enable other companies like Murray Goulbourn to be able to start with confidence to place 30-truck orders. International Trucks or Iveco Trucks in Dandenong never wanted to release a down-line production version of our Cummins 280-horsepower engine, because they were waiting for a 30- or 40-truck order to go to

production capacity. How do you make enough incentive so that a lot of those things happen rather than in 10 or 15 years still being around a table, as we are today, talking about the same issues?

Senator O'BRIEN—What are your suggestions?

Mr Bortolussi—Certainly, there is the infrastructure. For the last 20 years we have been talking about the chicken and the egg: one was the truck or the engine, whatever the availability, and the other was the infrastructure; which one comes first? We are now at the point where we have some reliable and available trucks, engines, to be one part of the chicken and egg equation, but the infrastructure is not there. But, if you go to an Origin or an AGL, they are still trying to build the financial equation that says, 'Well, if I'm going to invest in a corridor, where is my load demand so that I can make it financially viable?' Someone needs to stump that lack of return for some time or have that return supplemented so we get over the hurdle. So I think infrastructure is certainly a big issue—not that we are putting up our hands for money on individual technicians and support structure. But, for us to make sure that products are reliable for our customers, who will then buy more, they need to know that we have all the right support in place so when something goes wrong we can fix it and fix it properly. At this point in time I think the major impact of dollars is probably on infrastructure and gas—LNG, CNG supply.

Senator O'BRIEN—Does it matter which one?

Mr Bortolussi—Yes, it does. I think Sean Blythe canvassed that discussion pretty well. For interstate, there needs to be an LNG fuel for fuel density on board. You can get away with CNG on a local front. Garbage compaction is also swinging to LNG from a point of carrying sufficient fuel on board without tipping the chassis weight over the limits. We make the point in our submission about chassis concessions to allow for the bigger weight penalties of carrying the additional gas gear on board.

Senator O'BRIEN—Thanks very much.

Senator NASH—In relation to farm machinery, do you do any work with tractor engines or that type of thing? Is there any capacity to do that?

Mr Bortolussi—Yes, we do. We have a range of engines that we sell through Case particularly, also New Holland, from 200 horsepower through to 400 horsepower. You could probably ask the same question about mining equipment and other areas where there are typical diesel consumers that are not on-road users. They are all struggling. They are trying to make a bean in a drought environment.

Senator NASH—Is there much of a take-up? What would be the process if Joe Smith, farmer, decided, 'I want to convert my tractor to be able to use gas'? Is there capacity to store the gas he would need on a farm? What would be the cost of conversion? Is it possible to convert or do you need a specific engine?

Mr Bortolussi—We have been advocating the OEM channel, as opposed to the conversion aftermarket process. Certainly our engines could be applied in a tractor. They are typically developed for automotive on-highway and not for agriculture, but that is possible. When you get

into remote applications, you are saying, 'Where does the gas come from?' Typically it is not reticulated in a lot of farming areas. If you talk about LNG in those areas, you are probably talking about a different equation. It is not normally discussed in a farming environment. I think the reasons are that it is typically so far away from gas pipelines, and you have an issue about how to get fuel to one 3,000-acre farm, then to the next and to the next, when you have two tractors here and two tractors there, typically domiciled in the same place.

There is a discussion going on at the moment around mines, because they are huge fuel users and they are contained. Typically, the vehicles come to a central point for fuelling or the fuelling goes out to the mine trucks, the loaders or the excavators. Farming is a pretty difficult discussion, really. Mining is chipping away at it. Typically the issue for off-road users is that they get the 38c rebate. But how do you bridge the gap in terms of the financial benefits when you can claim back the 38c a litre? But, of course, as the price differential continues to move, that 38c gets whittled away.

Senator WEBBER—This question follows up on what Senator Sterle was talking about. Like Senator Sterle and Senator Siewert, I am from Western Australia. Basically, if I take into account what everyone has said so far, apart from internal Perth usage, there is no incentive for any alternative fuels in transport in Western Australia—there is no real capacity or incentive for anyone to look at change in Western Australia unless the government does something.

Mr Bortolussi—Western Australia is perhaps a little more developed than other parts of the country, because there is an LNG refuelling station.

Senator STERLE—We have been saying that for years!

Mr Bortolussi—On this subject, anyway! I know that the Kleenheat organisation are looking to expand that facility, because they can see that there is some level of growth coming. We have the Sands fleets, and the SITA fleet and a few others are operating there. You have to ask: are you really making major 15 to 25 per cent inroads into the marketplace? That is what Sean Blythe was really talking about. We know that we have had some Cummins powered waste compaction vehicles there for five or six years now, and the population is eight. The real issue is how to make some level of change that will do that, rather than this—that is really the discussion.

Senator MILNE—I want to ask about a carbon price. If a government decided to put a price on carbon, either through a tax or through an emissions trading scheme, a combination of both or whatever, have you made any assumptions about what that would do for your industry? There are two ways of looking at that: either you can go out with government support in a proactive way and, virtually, incentives, or you can tax carbon, which then puts you into a much more competitive position. In relation to that, you said that China and California have both put in place drivers for gas conversion—the taking up of gas. Is that how they have done it, or have they done it with targets for both alternative fuels and carbon pricing?

Mr Bortolussi—My understanding is that most of those have been air quality as opposed to specific carbon-taxing issues. I do not consider I am fully up to speed on it, but my knowledge is that it is mainly being driven by an air quality issue. Certainly if the carbon taxing was brought into this country then that would be another equation which would tip the balance towards

methane and that pricing differential that we have been talking about, presuming we would just do that.

Senator MILNE—So instead of talking about subsidies and incentives for alternative fuels we should talk about internalising the externality of fossil fuels and then we would start getting a driver. Is that a fair comment?

Mr Bortolussi—I think it is possible. The thing I would warn about, and we make this point in our submission, is that the majority of trucking operators at the moment are really struggling to pass on the cost of fuel as it is. We are seeing bankruptcies and companies going to the wall. So I think any carbon taxing would need to be thought about in the mode of perhaps benefiting methane as opposed to disincentivising diesel. You are just creating another economic driver to move into methane based products.

CHAIR—I think you have already said that you will send some information in as a response to Senator Milne. Is that correct?

Mr Bortolussi—Yes, I had to follow up the CO_2 and the particulate question. It was really a comparison between diesel and natural gas.

Senator MILNE—Also, you listed a whole lot of companies and projects that have made the conversion. You talked about the Sands one and a Perth based waste compaction or conversion project. Would you be able to send us a page of dot points on the various companies and projects that have made the conversion just so we have a list of examples? Was there a Williams one as well?

Mr Bortolussi—Sean and I can work together on that. We should be able to pretty quickly come up with about 90 or 95 per cent of the ones out there.

Senator MILNE—Just provide dot points of the good examples.

Mr Bortolussi—Senator Sterle had a question about the differential on price on the actual engines as opposed to the whole truck.

Senator STERLE—Yes. Does the engine take in the extra plumbing and pipe work?

Mr Bortolussi—No. For example, with the Boral example, we are supplying the engine but Advanced Fuels Technology is providing the gas storage on the vehicle and the associated plumbing and regulators.

Senator STERLE—So you do not do that when you do the truck. Can you supply me with that? That is in confidence.

Mr Bortolussi—Sure.

Senator STERLE—Thank you.

CHAIR—Thank you very much.

[11.34 am]

CAMPBELL, Mr Richard, Convenor, Finance Group, ASPO Australia

MAYO, Dr Sheridan, Deputy Convenor, ASPO Australia

CHAIR—Welcome. I remind you that these proceedings 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 as a contempt of the Senate. It is also a contempt to give false or misleading evidence to a committee. These are public proceedings, although you may ask to give evidence in camera and the committee will consider that request. If you object to answering a question, you should state why and the committee will decide whether we want to insist on you answering. If we do decide on insisting that you answer, you may ask to give that evidence in camera. I would like to invite you to make an opening statement.

Mr Campbell—Thank you for the opportunity to present our viewpoint. I take it that by now the committee members are very well versed on the issue of world oil depletion and discovery. I say that because Australia is only a particular case of a world phenomenon. As you know, the United States imports 60 per cent of its oil and is moving to higher figures, and the UK is also now becoming an importer. It used to be self-sufficient. New Zealand was semi-self-sufficient and is rapidly becoming non-self-sufficient. So, in that context, Australia is only one of about 30 countries that are facing a fairly bleak future for their oil supply, despite some marvellous achievements on the North West Shelf and so on and some minor additions to the Bass Strait oilfields. As you know, Bass Strait has about 10 per cent of oil left. The broad situation is very simple. Despite the efforts of Woodside, BHP and the other explorers on the North West Shelf and a few minor explorers in the centre of Australia, we are not finding much oil anymore. Woodside has a marvellous picture ahead of it for the next 10 years but after that its big fields, such as Enfield, will be depleted by, say, 2020.

In a sense, we are running on a wish and a prayer that oilfields may be found—there might be more oil up near Sunrise, 300 kilometres off the coast of Western Australia. But it is very imprudent, you would think, to take the view that this will necessarily occur, that miraculously we will find lots of oil. The consequences of that are fairly obvious. We have seen them recently. New Zealand is in the same boat. New Zealand's balance of payments has blown out to nine per cent, largely to do with its oil imports, and Australia is in the same boat. We are now running at six per cent deficit, six per cent of GDP, and the USA is in the same boat—40 per cent of its deficit is oil. Remarkably, economists find it very puzzling that our balance of payments keeps on not balancing and they scratch their heads and wonder why all this exporting of minerals to China does not come up in a marvellous balance of payments. Of course it does not, because, on the other side of the ledger, we are going down. They are the absolutely key points.

Dr Mayo may want to add something here, but another key point is that there is an assumption that because the oil price goes up, people will go and find more. But, as a practising sharebroker, I know that is not the case. If I go and ask Mr Smith to buy some genuine oil exploration shares, I will be rapped over the knuckles by my managers. The general approach of a good professional

is not to encourage risk. So, in fact, the opposite happens: people steer away from risk and you find many small oil companies doing amazing things in America. Many of them have left Australia. There are about 100 small oil companies on the Australian market looking for oil or gas in one way or another but perhaps 50 per cent of them are looking in America. We are not finding that the price encourages people—certainly not the big guys, the Woodsides, the Chevrons and so on—to find oil. They have a big incentive, but it is not the clear incentive that popular imagination suggests.

The final point I want to make briefly at the start is that the whole attitude to risk has changed a bit. The new rules that the Australian parliament has introduced make sure that people are very frightened about taking risks, because all the documents mention risk, risk, risk. There is a clearer definition of duty of care. A financial adviser is expected to go out and investigate, and, if not, get it all right. You will find that the bigger brokers are all quite happy to say that Qantas was a good investment, but we now see Qantas well below the price that many large brokers were suggesting it should be bought at. They suggested it would go to a much higher price. You could say: 'That's a bit strange because, surely, it was obvious that the oil price was going up. Surely, it was obvious that Qantas would have difficulties.' Indeed, the chief executive has admitted that. He said it very clearly, but that message did not seem to get through. We see that a lot of other companies are suddenly having difficulties for that very reason. Repco's share price has collapsed and they contribute that largely to the difficulties for motorists, the lack of purchasing power and so on. Those are our key points. Dr Mayo may want to add a few more.

Dr Mayo—I just want to briefly add a point about risk management in the event of spiralling oil prices. I have a document that I would like to distribute, if possible. It gives a specific example of the first step in risk management, which is to assess our vulnerability to high oil prices. The particular example is in the context of transport and planning. Griffith University academics have identified the regions in different Australian cities—Brisbane, Sydney and Melbourne—which have the communities and the zones which are most sensitive to high oil prices. This kind of risk assessment, an oil vulnerability assessment, is really essential in managing the risk and in making our cities, our businesses and our industries more resilient in the face of an uncertain future.

Senator STERLE—You have me depressed now, Mr Campbell. Out of curiosity, regarding our wells, how much of Australia's oil supply is capped—oil that we are not using? Do you know?

Mr Campbell—I do not think there is a figure, but I would suggest that it is absolutely zero. In a practical, commonsense way, very little would be capped. There is plenty of oil to be tapped. Woodside has found oil at Sunrise, and they have changed the name of the field. They mentioned the oil they found in, I think, one line. 'Capped' suggests secrecy. That is not the case. They are waiting for infrastructure. Sunrise is 300 kilometres from the coast. It is not capped in the sense of: 'We've got lots of oil, mate.' It is not like that.

Senator STERLE—I can only speak for myself, but I have the perception that we have a lot of oil out there, but we are just not bringing it to the surface.

Mr Campbell—If you had a lot of oil out there, you would be pumping it as quickly as possible. There are two schools of thought. One group of financial advisers and researchers say

that the oil price will fall. So, by definition, the oil companies would be out there pumping like mad to get the premium. On that argument, you would think it is unlikely, but, just as a matter of fact, not a lot of oil out there is secret.

Senator STERLE—I noticed that you mentioned that we are exporting oil very cheaply and importing it at a greater price. That is right, isn't it?

Mr Campbell—We are exporting it at the world price. We are just making the point about the deal with China. The PM was in China and, to be frank, he was probably wincing at the price that we negotiated. Oil was $28 or $32 a barrel at the time. So we are locked into a strange contract which did not have anything in it for elevation of the price, such as a ratchet clause. That is neither here nor there. Our broader point is that we are congratulating ourselves on exporting gas, but we are doing nothing about the obvious, in that we will soon be importing oil in far greater amounts—in volume and in price. That is the problem.

Senator STERLE—So, in your view, what should we be doing now?

Mr Campbell—Somebody has to say to the public, 'If you live in an outer suburb, in the next decade you will probably find that your fuel bills and your living expenses are going to be a lot higher and your financial situation may be unviable.'

Senator STERLE—I really am depressed.

Senator MILNE—That point has been made by a number of councils, particularly by Western Sydney's, who have pointed out that energy affordability is going to be up there with housing affordability as a major issue—and this map clearly shows that.

I want to pursue the issue of gas. Say you accept the argument that, regardless of when we hit peak oil, the age of cheap, plentiful, easily accessible oil is over. Let us assume that and that we are exporting natural gas at an extraordinarily cheap price. If you see gas as a transitional fuel, how would you suggest Australia's policy settings be changed? Would you ban the export of natural gas, because Australia is going to need it as a transitional fuel?

Mr Campbell—Our balance of payments would be in real trouble then.

Senator MILNE—I am interested in knowing about this as you do comment on the gas issue. What is your solution to Australia's energy security? This is quite opposed to greenhouse gas. It is the use of gas as a transitional fuel.

Mr Campbell—We do have a lot of gas. It is not quite as simple as it seems, but we do have an awful lot of gas. We have got coal seam gas by the trillions of cubic feet and we have got all the gas that could come from New Guinea, so we could suggest that people start switching to gas to take some of the pressure off the oil price. But the trouble is it is a world issue. Although we are talking about Australia essentially, what we do is not going to make the slightest bit of difference because you have got a situation where 4½ per cent of the world's population uses 25 per cent of the world's oil. That is in America. Essentially, the price is driven by the Americans and the Chinese. I think the Americans use about 27 billion barrels of oil a year.

When China gets to about a quarter of what the Americans consume—so when you get a quarter of the world's population using, say, a quarter of what the Americans consume per head—there will not be much oil left. The trouble is that the Chinese intend to get there. They are talking about having 140 million cars, which is roughly half of what America has got. If it is their ambition to have 140 million cars and eight-lane freeways all over China, there will be a tremendous amount of pressure on the oil price, because China itself is no longer self-sufficient. Daqing, its big oilfield which is producing about 40 per cent of its oil, is at its peak point. They are keeping its production steady but it is probably going to drop five per cent per annum from this point on, so that is going to put a lot of pressure on. That is why the Chinese are running around the world all over the place looking for oil.

Senator MILNE—Yes, they are buying it all up. So your proposal is a more rapid transition to natural gas to soften the blow to the economy that is inevitable?

Mr Campbell—That is the first step and then you could have simple measures. That is not my field.

Dr Mayo—Obviously, encouraging fuel alternatives is valuable. But, from what we have heard this morning, it will take quite a while, even if we start now, before that really bears fruit in substantial amounts of alternative fuel. In the short term, in order to buy time, the lowest hanging fruit are certainly efficiency and conservation. They should be a high priority.

Senator NASH—In your opening comments in your submission, you refer to the fact that you believe the rising cost of oil will initially have both positive and negative consequences. I think we are all very depressed by the negative consequences. What would you suggest are the positive consequences of the rising cost of oil?

Mr Campbell—People like me can make lots of money out of it. We have got some very good engineers. Companies like WorleyParsons are very good at the quick design of infrastructure and they are in great demand all around the world. I am stating the obvious that in that respect there are opportunities. But as for the overall picture, obviously our arithmetic says there is—

Senator NASH—It just struck me that you had positives and negatives in there. What you are basically saying is there will be opportunities for people to benefit from the fact that there will be higher oil prices.

Mr Campbell—The gas price will adjust. As you know, Moscow cut off the gas to Ukraine on 1 January. They had a longstanding cheap deal with their former satellites. That put the price of gas up virtually all around the world. Everyone started to realise that it was not as simple as all that. Russia changed its policy recently in May. They said that they were going to lift their nuclear input. I think about 16 per cent of their electricity comes from nuclear stations at the moment. They are going to put it up to 25 per cent. That suggests that they are not confident about the amount of gas they have. That is putting pressure on all around the world. The Danes, the Dutch and the Germans all depend on Russian gas to supplement their own declining gas supplies from the North Sea. That is putting pressure on LPG prices around the world. They are all inching up. In that sense, our LPG is going to do quite nicely.

Senator NASH—What do you see as the major inhibitors at the moment for the development of alternative fuels and the take-up of alternative fuels? I am referring to all of them: not just gas but all the alternatives we have to oil.

Dr Mayo—If we consider all the alternatives, certainly there has been a heavy reliance in transport policy on private transport and a lack of emphasis on public transport. That has just been a policy choice. I do not really know all of the background to that. In terms of alternative fuels, I think the witnesses that appeared prior to us put it as well as anyone could. There is huge capital investment with an uncertain future, particularly for new things like coal to liquids. I assume that at some point you will hear about the possibilities of gas to liquids. We also heard about CNG and LNG. There is also the infrastructure if people cannot fill up their cars. The chicken-and-egg situation you identified earlier really is an important factor.

Senator NASH—Mr Campbell, in your conclusions in your submission you say:

Funds and financial advisers may not be fulfilling their investigative duty of care in preparing investors for oil scarcity.

Do you want to expand on that a little for us?

Mr Campbell—It is an interesting point, isn't it? If it is bleeding obvious, as it seems to be to many people like the head of Chevron and other chief executives—not all; the head of BP thinks that the oil price is going to fall—one would have thought it would raise the ante a bit. There is lots of information about the decline of oilfields. For example, you have no doubt heard of Matthew Simmons's book on the Saudi oilfields. That is a published book that says that the Saudi oil is very mature. Ninety per cent of it comes from seven or eight fields, which have all been in production for 45 to 50 years. The likelihood of them surviving another 50 years is remote in the extreme.

His research suggests that they have mounting problems, that there is water coming in. The amount of water they get out is about 30 to 35 per cent. That suggests immediately, even to an amateur, that it is post mature. So there is, if not a fact, at least a clear suggestion that there are mounting problems. Does that mean that then the onus falls back on the securities industry to be far more proactive in investigating the risks ahead? Whether a judge would take that view might depend on whether he did or did not have a whole lot of oil shares. He might have Qantas shares and get quite worked up about the recommendation to buy Qantas shares, for example. I just raise that as an interesting idea.

Senator NASH—It is a very interesting point because of the information that they are working from. The committee is getting a whole range of views on what is true and what is not true in this whole debate.

Mr Campbell—It is not really a question of truth, is it? It is more a question of arithmetic.

Senator NASH—Not necessarily. It depends. We are getting very conflicting views on different points right through this whole debate. My question is: what is right and what is wrong? How do we formulate our understanding?

Mr Campbell—The legislation puts it in terms of things being 'on inquiry', things being investigated. It is not that the adviser or the chief executive or the person in the fiduciary position of care should be right rather than wrong but that they should take steps to investigate. That creates a very grey area, doesn't it? It is about them not actually addressing the issue. They need to say things like: 'There is mounting evidence, but I can prove it is wrong. I'm going with Lord Browne at BP and saying that there is no problem,' or 'I'm going with T Boone Pickens'—or the head of Chevron or another chief executive—'who says there really is a problem'. I am not suggesting that we want to have a witch hunt about these matters, but it does a very—

Senator NASH—Your point is that the investigation should happen and that this should be looked at.

Senator WEBBER—In a way, I want to return to one of Senator Nash's earlier questions about some of the positive consequences. You mentioned in your submission the development of places like the Browse Basin. I am from Western Australia. People who live in Western Australia know that that resource has been there for a long time, but the push to develop that is due to the increase in oil prices. This is another chicken-and-egg question: if we develop that, what do you think is going to happen to that resource? If we increase the supply of gas within our domestic economy, will that force the rest of the infrastructure to be developed?

Mr Campbell—It will. You have to put it more practically. You have to say: how long will it last? As I said, Woodside has discovered a very good oilfield. Three or four other similar ones are not going to last all that long because the world consumption is so enormous. We are using 30 billion barrels a year; we are using 84.5 million barrels a day. We are not finding 84 million barrels a day. That is why I say it is arithmetic: in a sense, it is that simple. Then it gets complicated, because the Canadians have lots of tar sand and Venezuela has lots of bitumen, but you have to boil it up and use gas. Canada uses gas to heat up the tar sands. In fact, the American energy information administration has this table which says, 'World oil demand will go up enormously but don't worry because Canadian tar sands will fill the gap.' But, if they fill the gap with that, they will be using their gas, because they have to boil up the tar sands. What do they do with their gas now? They send half of it to America every year, and Canada is a cold country. In their official documents, you see how much gas Canada has got left. They only have 20 years left. They will find probably another 10 or 20 years worth after that—perhaps. But something does not jell there, does it?

Dr Mayo—Adding to that, when it comes to reserves like the tar sands, it is not just the size of the reserves that is important but also the rate at which it is physically possible to use them. It is much harder to produce oil from tar sands. They cannot just ramp up production anywhere near as easily as they can with other resources. Even with other resources it is becoming more difficult.

Mr Campbell—That is one of the problems at the moment. There is a fabulous amount of money being made in Canada at the moment because everyone is into tar sands. But one of the reasons why the prices of tires, tractors, engineering and everything has gone up is because the Canadians are going hell for leather to get out the tar sands. That has put up the prices of all of these things—engineering contractors and all the rest of it—all round the world, because they are all rushing to Canada. It is the new gold rush. But what happens when you get down to 200 feet and 500 feet and so on? It gets more and more expensive.

Senator WEBBER—It does, but the increase in prices of things like oil are making other alternatives more viable and making other fields economic that previously were not winning the economic argument.

Mr Campbell—Yes. Meanwhile, if you are living in Narre Warren in Victoria, you are paying an awful lot for your oil. That is no answer.

Senator WEBBER—Not as much as you are paying in regional Western Australia. But there you go.

Mr Campbell—If you are driving to Kalgoorlie then—

Senator WEBBER—Up north, you pay about $1.75 a litre at the moment. It is not nice.

CHAIR—We keep hearing that there is plenty of oil and gas out there. We have heard of various scenarios for the price of oil, with ABARE having it on the low side and saying there is not a foreseeable problem with peak oil, and other organisations such as ASPO pointing to a whole lot of other literature. My question relates to how decisions are made. For example, in the media today and yesterday was the price of gas and the fact that we want to renegotiate the price at which we have just sold it to China. My understanding is that that contract was made four years ago. Is that correct? Wouldn't people have been forecasting then that the prices of gas and oil were going to go up?

Mr Campbell—Yes, they were.

CHAIR—That is what I thought.

Mr Campbell—Five years ago, the man who founded ASPO said that the oil price would be about $60 to $70 in 2005-06. He was dead on.

CHAIR—So the point is that people have been predicting oil prices going up, scarcity of oil and peak oil for some time.

Mr Campbell—Yes, for geological reasons.

CHAIR—And policy setters have been ignoring the information.

Mr Campbell—Yes.

CHAIR—And we are seeing now—even on a small scale, with gas—that the chickens are coming home to roost, with people wanting to renegotiate gas prices. Has the information been there and not been used?

Mr Campbell—Yes, amazingly. It is astonishing.

Senator MILNE—There was a news report recently stating that the drought and higher oil prices will cost the Australian wheat industry huge amounts. You made the point in your submission about the particular vulnerability of the rural economy. One of the concerns I have is

the issue which you referred to a moment ago—the overestimation by the Saudis of what they will put into the global market. We had the revision by Kuwait earlier this year—

Mr Campbell—They later denied that. It is important to know that. *Petroleum Intelligence Weekly* saw data which the head of Kuwait later on said was not factual. We do not know whether he was just covering it up. I personally think it is far more likely that the original report was correct, but we cannot say that they have definitely reached peak in that oilfield.

Senator MILNE—Is there any current literature which you think, from ASPO's research, is credible that gives us a re-evaluation of the real levels as opposed to estimated levels?

Dr Mayo—One notable energy analyst which takes the issues of peak oil seriously is Douglas-Westwood. In my own submission, which is a different one, I quote them as stating:

> ... ten-year data demonstrate that it is no longer appropriate to accept glib demand forecasts from oil companies, financial institutions and governments that predict, with wishful thinking, ever-growing demand levels, contrary to observations on oil supply.

One thing they have done, together with EnergyFiles, is develop their own databases to try and make accurate assessments. That is similar to the approach that ASPO has taken. While there is a big question mark over the size of Middle Eastern reserves, what is known is what their current production levels are and what their plans to expand that production are. With the expected performance of non-OPEC, it looks like within a few years even their expansion falls will fall somewhere short of the projected demands that the IEA frequently come out with.

Mr Campbell—For example, the Saudis are saying that they are going to lift oil production to 12 million barrels a day. It was interesting that in May their production figure dropped. It had been going at around 9½ million barrels a day and in May it was back to nine for some reason. Was that due to problems or were they being tricksy and saying, 'We'll take advantage of the oil price and bump it up a bit'? That is contra to what they have been saying. They have been saying, 'We want to reduce the oil price and keep it reasonable.' They would like it to be $55, $60 or something like that, so that people do not switch over to alternatives or take it all seriously.

There is a real need for somebody to get in there and investigate and use data such as Dr Mayo has suggested. There are various credible groups like Wood Mackenzie and Petro-Consultants and there is a group in the United States called Herod who have lots of data about these things. Probably the biggest resource is Matthew Simmons himself. His business has about 60 analysts and his firm does reports on every oil producer in the world. It is fairly unlikely that he has got it totally wrong. He may be a bit pessimistic. He may not be allowing for some fuel discoveries off the coast of Angola. All the while, every reasonable geologist or oil engineer is ready to say, 'The issue is finding oil in deep water in the Polar Sea off the north coast of Russia and off the coast of Alaska, off the coast of Angola, off the coast of Brazil or off Newfoundland, 300 kilometres into the Atlantic et cetera.' That is where they are looking. Oddly enough, they are not looking in central Australia—not much, anyway. But they are looking in Wyoming and all of the places where the easy oil was not found. The age of easy oil is over. It is not as if the age of oil is over.

Senator MILNE—ABARE project a price of $30.

Mr Campbell—That does not deserve comment, does it?

CHAIR—Laughing does not get recorded in the *Hansard*.

Senator MILNE—Seriously, ABARE has given evidence to the committee sticking to its projection of a $30 price for oil into the future.

Mr Campbell—It is extraordinary. They are predicating that price on oil to liquids. That is just a conjecture that somebody—not ABARE, somebody like me—will try to raise funds by saying: 'Come on clients. We'll all stick money into oil. We'll convert all this coal in Australia into liquids.' It is not that easy to stump up the capital. However, there are some programs. In fact, there is one company that has a very good program for converting brown coal into black coal. However, the liquid side of it is very minor. Theoretically, I suppose, it is possible because you can do it at $40 a barrel, but whether you would get a lot of investors dead keen to put their money into it is a different matter.

Senator MILNE—Thank you.

CHAIR—I have read quite a bit by ASPO in regard to biofuels and you talk about them briefly in your submission as well. My understanding of ASPO's view is that biofuels are not a large part of an alternative fuel regime.

Dr Mayo—That is certainly fair to say. Basically, there are issues of how much energy you get out for the energy you put in, which I am sure has been raised a number of times. Certain sources of biomass are much better than others. Using waste sources of biomass is certainly a good approach because the energy would have already been put in to grow the main crop and you gain additional benefit from the waste. The amount of biofuel that you can produce is going to be a drop in the bucket compared to what you need.

CHAIR—Have you being looking beyond the more traditional crops such as sugar cane et cetera to other sources of biomass such as lignocellulose and algae?

Dr Mayo—Those are certainly interesting. In the US there have been pilot projects using algae. They have not progressed to a mature stage yet. I think a project to grow algae from nitrate waste from sewage plants is just starting up in New Zealand. Projects like that are certainly worth keeping an eye on and, in the future, fostering. But as to expecting to suddenly grow all our fuel very quickly, there is the matter of how long it takes to scale these things up; they are not going to produce a whole lot of fuel tomorrow.

Mr Campbell—Symbolically maybe, but it is always going to be fairly marginal, isn't it? It would be useful if the public could appreciate that there is an issue and that they could be working towards using more biofuels. With a world population of 6.5 billion where, say, 20 per cent who are wanting to own cars are living in countries that do not have cars—Poland and Slovenia are really keen to have lots of cars—it is going to be pretty marginal.

CHAIR—Thank you very much.

[12.12 pm]

FLIEDNER, Mr Ian, Director, Communications and External Affairs, BP Australia Pty Ltd

FRILAY, Mr William John, Manager, Government Relations, BP Australia Pty Ltd

CHAIR—Welcome, and thank you for coming. Were you here before when I gave my spiel about procedures?

Mr Fliedner—We have heard it.

CHAIR—You have also appeared before the committee previously, so you know it. I invite you to make an opening statement.

Mr Fliedner—I will read a short statement and then we will take your questions. We are pleased to be here. This is a very important topic. It goes to the heart of energy security—that is, the availability and reliability of today's and tomorrow's energy supplies. On 14 June, in London, our group chief executive officer said:

> We are very conscious that people are nervous about the energy market. They want to understand why prices have moved as they have, and most of all, they want to know what we are going to do about it.

I think the best way for us to proceed is to summarise the key points in our recent submission and subsequent presentations, especially the presentation we made to some of the committee members in Canberra recently at the launch of BP's Statistical Review of World Energy.

From BP's perspective, the key points are: traditional hydrocarbons will continue to play a major role in energy markets for many years to come; BP has invested some $US47 billion since 2000 and it will spend a further $US50 billion over the next five years to explore for and develop supplies of oil and natural gas. Notwithstanding that investment, the BP Group has been looking at alternatives, including alternative liquid transport fuels and low carbon power for the stationary sector. BP's Australian investment in upstream is an equal one-sixth share in the North West Shelf LNG project, located in the Pilbara in Western Australia. While it is primarily known as a supplier of gas to the WA domestic market and for LNG export, it is also an important source of crude oil, condensates and gas liquids. BP holds a positive view about Australia's offshore prospectivity, especially in relation to natural gas, and it is conceivable that there will be further material discoveries.

We would now like to address the committee's terms of reference on the sufficiency of crude oil and products. At the meeting in Canberra on 16 June—just after the launch of the BP Statistical Review of World Energy—our head of energy market analysis, Mark Finley, made the following points to the committee members.

There continue to be ample supplies of crude oil. Proven global reserves remain at just over 40 years consumption and have done so for the past 20 years. World oil demand continues to be met

by the increases in supply. The year 2004 was an exceptional year in terms of global economic activity and energy demand growth. This is the exception compared with the long-term averages rather than the rule as we saw a doubling of long-term energy demand growth. Prices have been driven by world economic activity, especially in China. It has also been impacted by weather, geopolitics and, in particular—and this is relevant in the year 2006—anxiety about the reliability of supplies.

Counterintuitively, world inventories of oil have grown in the past year, but this has failed to weaken prices. What has happened is that the risk premium appears to have risen. The market appears to be concerned that spare capacity is now as low as 1½ million barrels a day in OPEC relative to its long-term average of about three million barrels a day and the potential of supply disruptions from a range of OPEC supplies—for example, Venezuela's capacity is about 1.8. Further price increases this year appear to be due to anxiety about the reliability of oil supplies but not the underlying fundamentals of physical supply and demand. Spare OPEC production capacity, the world's cushion for crude oil supplies, is still low but is likely to increase over the remainder of this decade, along with non-OPEC supply. Confidence in the expansion of the cushion will help lower the risk premium.

What are the implications for Australia on pricing? In our submission, we also made the point that we should not assume that prices will always increase. We also said that product prices closely follow crude prices, and Australia's prices are inextricably linked through trade to world crude and product prices. On availability of supplies in Australia, all the crude oil required to produce petroleum products at BP's two refineries is imported. That has been the practice for the past 15 years, and we envisage that will continue. BP also imports petroleum products, mainly diesel, especially in northern Australia. This is sourced from Singapore and other Asian refineries. We would anticipate this to continue in the future. Currently, Australia imports about 24 per cent of its product, but this proportion might rise with the decline in Australia's self-sufficiency.

While traditional liquid hydrocarbons will continue to be the mainstay of supplies, biofuels will be a very useful extender. On the day of our submission, we announced three major biofuels initiatives in Australia which will bring biofuels into the mainstream: investment for production at our Bulwer Island refinery in Brisbane of 110 million litres a year of renewable diesel to be made from tallow—we have already supplied feed stock for that in a contract with Colyer Fehr; we have signed a memorandum of understanding with Primary Energy to purchase the entire output of 80 million litres a year of ethanol from 2008 from a plant yet to be built in Kwinana in Western Australia; and we have also signed a smaller contract with CSR for 23 million litres from their Sarina facility. This will see BP alone meet half the government's 2010 biofuels target of 350 million litres by 2008. We will see a 200-fold increase in BP's biofuel sales by 2008. There is potential to take this further with the reform of the downstream market.

Recent BP global announcements affirmed our commitment to biofuels. They also reflected the demand for fuels that are clean, green and local. Last November, BP established BP Alternative Energy to spearhead an $US8 billion investment in zero- and low-carbon energy for the power sector over the next 10 years. On the economic and social impacts of Australia, we would offer the caution that you should not continue to assume that crude oil prices will rise indefinitely. In our submission, we draw on the lessons of history, referring to the graph of prices over the last 30 to 40 years.

On options for reducing transport fuel demands, there are a range of options and levers that both governments and markets can pull. The previous speaker talked about greater fuel efficiency, raising the average fleet standard, cleaner fuels, reducing pollution and improving air quality, driver education and fuel efficiency techniques, improved public transport in cities, traffic management and addressing urban congestion. In summary, it is our view that there is sufficient supply of traditional liquid fuels for the Australian market. Notwithstanding that, we see biofuel as playing a significant role as an extender; it will move from being a niche product to being more of a mainstream product in the future.

Mr Frilay—Madam Chair, I will make a slight correction: nearly all of our crude is imported, but there are a few shipments of liquids from the North West Shelf.

CHAIR—Thanks.

Senator WEBBER—Given the fact that the Chinese economy does not plan on slowing down any time soon and given the growth in the Indian economy—the increasing energy demands there—is supply going to keep up with increasing demand? Or are we going to have to make a big push into alternatives?

Mr Fliedner—There are two elements to that. If you look at the historical data on the oil production to reserves ratio, you see that it has been sitting at about 40 years for the past 20 years plus. So, if you sit back and look at what history shows—

Senator WEBBER—But to be fair, if I may interrupt, those reserves were based on a billion people on bicycles—not driving cars—in terms of the increased demand.

Mr Fliedner—Yes. The other, more fundamental, point is that oil will be replaced one day. The price at which it is replaced is driven by the backstop technology; that can be unknown. What can be known is that we are seeing greater energy efficiency in the capital stock, both in the transport sector and the stationary sector. The Chinese will not, I suspect, have the same energy appetites as America, because technology moves on and the capital stock moves on. They will be more efficient about the way they use energy. If you want a lesson from history, from 1980 to 2005 we have doubled the size of the world economy but have increased the consumption of energy, particularly oil, by only a third. Energy intensity of the world economy since 1980 has actually declined by 38 per cent. Markets and people do deal with the rising cost of energy. In the long term it is driven by technology; in the short term it is driven by behaviour.

Mr Frilay—Looking at the figures on Chinese growth from Mark Finley's presentation, consumption of oil grew 17 per cent in 2004. It was down to three per cent in 2005, yet the economy was still surging ahead at 10 per cent growth. So 2004 was the exception, not necessarily the rule.

Mr Fliedner—In 2004 there was a hiccup in their coal supplies; basically, they ran their power stations on oil for a year. Those glitches in the supply chain for coal in China have been sorted out. They are importing more coal and so we are getting substitution of other fuels for oil, if you are looking at the Chinese case. Likewise, in the US, when gas prices spiked, other fuel sources, such as coal, were used.

Senator WEBBER—In terms of energy consumption per head, America is obviously a significant challenge to all of us. Therefore it would, I guess, be fair to say there is a bit of a leadership role that they could play in increasing their efficiencies and using new technologies and what have you. We like to think that we in Australia are out there leading the way but, with the US using such a large amount per capita, if we could change their behaviour it could have an impact on the overall market.

Mr Fliedner—It is probably better if I do not comment on US government policy.

Senator O'BRIEN—Everyone else does!

Senator NASH—I particularly want to go to the renewable fuels component of what we are talking about today and what you are doing there. I would say at the outset that I do recognise that BP is making an effort to address the issue of renewable fuels, certainly more so than the other oil majors. But I still do not think it is a very significant effort by any stretch of the imagination in terms of what we need in this country if we are going to address renewable fuels.

I want to run through with you the announcement that you put out recently to clarify what you are going to do about bringing biofuels into the mainstream. Will the 110 million litres of biodiesel from the Bulwer refinery from 2007 be per year from that first year inclusive?

Mr Frilay—Yes.

Senator NASH—Will the 80 million litres from Kwinana from 2008 be coming in from the very beginning of 2008?

Mr Frilay—More likely mid-2008, given the time it is going to take to build the plant.

Senator NASH—I am very pleased you did, but why did BP undertake a contract with a potential producer with a plant that has not been built yet rather than access existing sources?

Mr Frilay—It was a bit of both actually.

Senator NASH—I do take into account the 23 million litres from CSR.

Mr Frilay—We have been looking at biofuels for about four or five years. There were trials and tribulations with that, but we had a belief in biofuels and we have kept at it. It really perhaps revved up in the last 12 months. We looked at it I suppose in two tranches. There were those who could supply now and those potential ones and greenfields plants which will take some years to get up. With greenfields plants you are looking at 2008 before you can do that. So we really wanted to open it up by saying, 'What is the best way of getting this?' We are approaching this obviously on a commercial basis. There are green elements and various aspects to it. But we really had to look at not only who were the present suppliers but also who were the potential suppliers. So it is a bit of both between now and 2008 and then 2008 on.

Senator NASH—In regard to the agreement for the voluntary targets, biodiesel is not coming on until 2007 and the majority of the ethanol not until possibly mid-2008, so obviously the 23

million litres of ethanol from CSR is the earliest component. What percentage of that 23 million litres will be distributed through you by the end of this year?

Mr Frilay—It starts in August. That is a bit of a function of the plant being available in Sarina in Mackay. That is the limiting factor there. I think we are taking eight million litres in the first 12 months and then 15 million litres in the second 12 months.

Senator NASH—In regard to the target for this year, which at the bottom of the range is 89 million litres, was there a specific percentage given to BP by government that you were expected to meet in the first year?

Mr Frilay—No. In our advice to the Prime Minister and the cabinet, we put in what the potentials were. They were aspirations on what we could do and what we could not do. But much of that was dependent upon various factors.

Senator NASH—What were those various factors?

Mr Frilay—Whether negotiations could be concluded, whether plants would be available—a whole range of things.

Senator NASH—So, of that 89 million target for this year, BP will be contributing eight million litres?

Mr Frilay—No, it is more than that. We are already producing—

Senator NASH—How much are you currently doing, then, to add to that eight million litres?

Mr Frilay—Our current rate is about one million litres per annum.

Senator NASH—So out of that 89 million target to the end of this year, your contribution is nine million litres?

Mr Frilay—There are a couple of factors behind this—

Senator NASH—Is that right or wrong? From the figures that we have just run through, is that correct or incorrect?

Mr Frilay—We will be producing this year about nine or 10 million litres. There are a couple of reasons for this. Our focus is Queensland and Western Australia, because that is where our facilities are. At this stage that is as much ethanol as we can acquire. There is a limitation on the supply side which will really only resolve itself in a year or two.

Senator NASH—Is there a commercial reason or is it just unavailable? What are the reasons you cannot access existing supplies?

Mr Frilay—It is a bit of both. CSR is the main point in Queensland. They will not be able to ratchet up their volumes until later this year. We are seeking supply from some others, but they are basically small scale.

Senator NASH—Given that the voluntary target is 89 million litres and we are trying to look at this with a very long-term view, it does not seem to be a significant contribution. I will move on to your release. In the notes to editors that went with it at the time it talked about E10 fuel. It said:

Fuel ethanol blends have been successfully marketed by BP in the United States under the Amoco and ARCO brands since the mid 1980s.

Why in the United States only, and not here? That is 26 years ago.

Mr Frilay—We initially commenced trialling ethanol in 2002 or 2003—I cannot remember the exact year—in Brisbane at six service stations. The intention was to move ahead at a fairly rapid rate at that stage. The trials were highly successful technically, but they came to a halt when there were problems of perception in Sydney when there was marketing of all sorts of quality grades of ethanol. There was no signage and there was a public outcry over the use of ethanol, and ethanol got a bad name. It was ironic, because at our service stations in Brisbane we were showing full signage et cetera. Our service stations were appearing on the national current affairs shows, the implication being that we were also doing it in Sydney. We were not selling any in Sydney.

At that point we stopped in Brisbane. We knew that the tests were okay and we had no problems with the vehicles or pumps. We held off for another six months. We decided we would try again, this time in Mackay, which is in a sugar belt. We thought there would be positive reactions from consumers there. We were supplying E10 through our distributor in Mackay. After about 10 months we did a market analysis of it because the results were not proving wonderful at that stage. Then, with the Queensland government, we analysed that we needed to promote it more, offer incentives, advertise, bring out the links with the sugar industry and explain why BP is doing it. We changed orientation.

There was also a concern amongst a lot of people that it would damage cars, so to try to address that issue we started a marketing campaign headed up by saying that the BP fuel guarantee is behind this fuel. We also said that this was good for the region. There were pictures of fuel tankers coming out of sugar cane paddocks and things like that. We also said that it was good for the environment. That saw a significant increase in the market. The Queensland government were quite helpful in this and Sir Jack Brabham helped launch this. We saw a significant increase in the volumes but while that increase looked good, of itself it was nowhere near enough to get a stepwise jump to bring ethanol into the mainstream.

We could see it was not going to achieve the targets or bring new plants on stream—it is going to take years and years to do this. Then we asked: how can we make the stepwise jump up, even though the supply was not really available? How could we do this? From about this time last year we asked how we could go full bore at this to bring it to that point. From the time of the Prime Minister's summit to the time of that announcement we had well over 50 meetings with potential suppliers. It has been a very serious effort to make this transition. I think the rate has continued since. Apart from the three contracts, we have opened a blend plant in Mackay to try to improve the logistics of supply into North Queensland. That is an E10—ethanol and petrol—blending plant. There is now a special unit within BP on biofuels. It has been a very serious attempt, and remains so.

Senator NASH—How many sites do you have that sell E10?

Mr Frilay—Roughly 30 to 35.

Senator NASH—And they are mostly in Queensland?

Mr Frilay—Queensland has been our focus. There is a reason for this. We have facilities in Queensland—we have a refinery and terminals. It is a bit the same in Western Australia. In New South Wales we do not have a refinery and we have only one terminal. We do not have a terminal in Victoria. We have a terminal in South Australia but no refinery. Also in Queensland there is the resource base and the state government has been very positive.

Senator NASH—What is the price of E10 compared to unleaded petrol at those sites?

Mr Frilay—At the sites we operate we price it the same. For the distributor sites that use it—and the distributors have been pretty positive about the whole thing too—it is a matter for them to price.

Senator NASH—Why do you price it the same? I ask that because the independents manage to sell it at 3c or 4c a litre lower than the price of unleaded petrol at the same site. Why is BP selling it at the same rate?

Mr Frilay—There are two factors. Primarily it is cost. At this stage it is not cheap for us. It is low volume and the actual logistics are quite difficult. We get virtually all our product from CSR in Mackay and it has to be shipped down to Melbourne for drying and then shipped back to Brisbane. It is trucked out into sites in Brisbane and, I think, up to Mackay. A lot of it ends up about 20 miles from where it started. As you can appreciate, that is not exactly an ideal way of doing it, but it is in its formative stages and down the track we are planning to get those costs down. At this stage it is not the optimum cost break out.

There is a second factor. We have sold 20 million litres of E10 and we have not had one single problem with it. It has been quite positive. We have moved to have three service stations in Mackay, with the cooperation of our distributor up there, phase out unleaded petrol on the forecourt and just put in E10. We have changed the name: we call it 'the new unleaded'. That happened about six weeks ago and it is progressing quite well. That is an important indicator. One of the big risks here is whether the market will accept it, and that is sort of putting a toe in the water to see if that will happen. At this stage, where you have both fuels on the forecourt, it is a niche fuel, but if you are going to take it further it needs to take that step. Ultimately, it will probably be the market which will determine the prices.

Senator MILNE—I would like to return to the fundamental question of global oil supplies. We have just heard from ASPO, who said that there is a real problem with oil depletion, with geopolitical factors et cetera certainly making it worse in the short term. Nevertheless, oil depletion is happening. We have a submission from you, BP, saying that the idea that oil is running out is simply untrue, that there is no physical shortage of oil and gas—and I will just set aside gas for the moment and talk about oil. So we have a situation where, as we pointed out earlier this morning, experts from around the world are saying that there is a problem, that there has been an overestimation of oil supplies from the Middle East and that we need to be gearing

up for a change, but where BP are saying, 'No, there's no problem; there's no physical shortage of oil at all.' I will ask you about peak oil to start, before I get to your statistical review of world energy. Do you think that peak oil is a concern and when do you think the peak will be?

Mr Fliedner—I do not think we can comment on when peak oil will happen. It is almost a truism: the world will one day run out.

Senator MILNE—Do you think it is a concern now or in the foreseeable future?

Mr Fliedner—As we look at the data, at the production to reserves ratio, history tells us that for the last 20 years the world has managed to have about 40 years of supply up its sleeve. As we look forward at likely future production, we do not see that changing much. Now, it is true that there is speculation about what is in OPEC and what is in non-OPEC areas and things like that. Historically, if you go back to the sixties, perhaps the OPEC reserves were underestimated, and in later periods there has perhaps been an incentive to overestimate OPEC reserves. But it is not just BP that is looking at global reserves; the IEA looks at them, various national governments look at them, various independent consultants look at them. They all have different techniques for building up their reserve numbers. BP relies on national numbers but also tests those against company returns, which are improving in terms of quality. We have better access to in-country information for the former Soviet Union now. So, while at the end of the day we accept national government estimates, we do apply a certain amount of rigour to what people are offering up as reserves and, so far, the leadership of this company have been confident in saying that we do not see a short-term issue.

Senator MILNE—So what do you think is the likely future trend in oil reserves?

Mr Fliedner—We think there is more oil to be found.

Senator MILNE—What is your evidence for that?

Mr Fliedner—We are spending $50 billion in the next five years alone on sourcing additional supplies of oil, so I guess that is an endorsement. We are using our shareholders' money to basically expand this business, in both oil and gas.

Senator MILNE—You are spending the money, but that is not evidence. I asked what the future trend in oil reserves was likely to be and what evidence there is that the reserves are there, and your answer was, 'We're spending $50 billion and we wouldn't be doing that if we did not think they were there.' That is fine, except that does not say anything about whether they are actually there or not.

Mr Fliedner—Let me put it another way. As technology changes, your horizon—where you look for oil—changes, and that is changing quite rapidly. Whereas 10 years ago we were stuck in, say, 200 metres of water to look for oil and gas, now we are at 1,500 metres. So whole new plays that previously were not available to us are becoming available for both exploration and development. There are large patches of hydrocarbon plays that were previously closed off to the industry—to the world, in fact. Changes in technology such as deepwater drilling, three-dimensional imaging of reservoirs, better recovery rates, all those things, change the picture of what is potentially available as reserves, and we see that number going up, not down.

Senator MILNE—So what is the trend in the success rate of exploration per expenditure, given what you are saying about the increased difficulty in terms of deep water et cetera?

Mr Fliedner—I can only speak for BP and in very broad terms. Whereas 20 years ago you might have had a success rate of between one in 10 and one in eight, our success ratio now is in the order of one in three and one in four. So, for every piece of hole you drill, the success ratio is higher. That is a function of technology and industrial capability.

Senator MILNE—What do you say about the activists' criticism of the statistical review of world energy when they say that essentially that statistical review has been a compilation of third-party assessments, that it includes all of the large additions to the Middle East reserves, and the fact that we cannot verify those?

Mr Fliedner—We do use third-party sources. We use national governments' statistics. But what we constantly do is review and test the data for veracity. We do that from a number of sources, as I said. We look at company data in those countries and we have other experts looking at particular areas. Again, the criticism is true: we do use third-party information. However, the point I would make is that it is not just BP looking at these numbers; there are a wide range of organisations, national and multilateral organisations like the IEA, looking at these things. In one sense, if we have got it wrong, then a few other people have got it wrong as well.

Senator MILNE—In relation to that, though, it seems that there is an awful lot of data and analysis around which questions that, but the companies which benefit most from 'business as usual' are the companies that are arguing most strongly that the reserves are there and we do not need to worry about a transition strategy. It is the same argument that fossil fuel users used for a long time for greenhouse, and that cigarette companies used for a long time to justify selling cigarettes. In both cases we were more likely to hit a wall faster and with much greater dislocation because we did not take seriously those who looked at the analysis and came up with different figures. Why should we believe BP when other large oil companies are saying that the age of cheap, easily accessible, plentiful oil is over and, taking out the geopolitical factors, peak oil is coming in the next 15 years?

Mr Fliedner—BP agrees with some of that. As far back as the mid-nineties we said we were living in a carbon-constrained world and that the energy services we provide in the future would need to take that into account. We have started to invest in alternative sources of low-carbon and zero-carbon fuels. So we are acknowledging that there is an issue around carbon, which is different from physical suppliers of molecules and things. We have set up a company called Alternative Energy aimed at the power sector and at delivering zero- and low-carbon footprint power for the electricity sector. And we are starting to step out now on biofuels. So to say that we are not seeing a transition in energy markets is just not true in BP's case.

Senator MILNE—I was not referring to the alternative fuels and the greenhouse gas issue; I was referring purely to the supply issue and saying that there are a whole lot of people around, and other companies, agreeing with the analysis that oil depletion is real. Since BP has so much to gain by arguing that it is not real and your statistical analysis here is based on Middle Eastern governments' truthfulness in relation to their reserves, some people would say that does not add up when you look at the level of production. We just had some examples a moment ago, where

they are meant to be ramping up production and they cannot achieve it. Would you say that BP's analysis is on the somewhat optimistic side?

Mr Fliedner—No. First of all, we are looking at history. We are analysing history and compiling data on what we have seen happen in energy markets. The point you made is correct: ultimately, we have to rely on third-party sources. But we do test those sources, and we are comfortable with the numbers that we publish. If peak oil is a reality, then what you will see is a continued rise in oil prices. An individual company like BP, particularly with its investments in oil substitutes and lower carbon fuels, is well placed for that transition. To say that we are not a beneficiary of continuing rises in oil prices is just not true.

Senator MILNE—You are a beneficiary of higher oil prices. I was talking about the transition—it delays the transition.

Mr Frilay—I think it is as much in our interest to get that right as it is in anybody else's.

Senator MILNE—Perhaps you can tell me how you test the veracity of the claims of Middle Eastern countries. For example, their reserve figures have remained unchanged for many years, suggesting that new discoveries and reserve growths have exactly matched production, which is implausible. You say that you test what those Middle Eastern countries say. How?

Mr Fliedner—We have various consultants. We talk with these people. We talk with the IEA. We talk with national governments, who are also interested in those things. But at the end of the day you have to rely on third-party advice.

Senator O'BRIEN—You referred to a primary energy ethanol plant being constructed at Kwinana. Is that right?

Mr Fliedner—Yes.

Senator O'BRIEN—Is that the company that received a bit over $1 million from the Department of Transport and Regional Services with a view to constructing a plant at Gunnedah?

Mr Frilay—That is certainly a Gunnedah based company.

Senator O'BRIEN—Instead of building a facility at Gunnedah, they are building it in Kwinana. Is that what you are telling us?

Mr Frilay—I cannot speak about Gunnedah. I do not know if it is instead of. I can confirm that—

Senator O'BRIEN—You have contracted them to build it at Kwinana, and will buy their production not from Gunnedah but from Kwinana?

Mr Frilay—We have signed an MOU with them to buy their plant output from Kwinana. But that does not preclude other possibilities as well.

Senator O'BRIEN—Sure. But you are not going to buy from another plant; you are going to buy from a Kwinana plant.

Mr Frilay—In WA?

Senator O'BRIEN—Yes.

Mr Frilay—That is the current proposal.

Senator O'BRIEN—You are concentrating on Queensland and Western Australia, not New South Wales.

Mr Frilay—Queensland and WA are the primary sources because that is where our comparative advantage is. We have the facilities. We have the ability to handle it. If you do not have a terminal, you have a problem. You cannot just take ethanol; you have to do something with it. You are reliant upon other parties.

Senator O'BRIEN—You talked about some issues with the transportation of the Queensland ethanol—taking it somewhere to dry it and then taking it back to Brisbane and further north.

Mr Frilay—Yes.

Senator O'BRIEN—Is that why the primary energy plant is being set up near your refinery in Kwinana?

Mr Frilay—It is one factor. We look around at what possibilities there are and what the hard commercial facts are.

Senator O'BRIEN—I am asking the question because there is a whole lot of discussion about how you promote the production of ethanol. If the business to BP is best conducted by promoting production near a refinery, it would be useful to understand that and to understand whether there really is a future for a whole lot of ethanol plants that are well removed from the main refinery distribution points.

Mr Frilay—That is a good point. I do not know the exact detail of the Kwinana one, but it being a central point or something may have been the reason. There are other possibilities. It is still a bit of an open question, but you have raised a good point: do you locate them there or elsewhere? That is obviously a point which both potential suppliers and potential buyers would be looking at.

Senator O'BRIEN—You gave an answer to Senator Nash's question about the reason for no cost differential even though ethanol is supposed to be a bit cheaper; there is 10 per cent ethanol in your fuel and you are charging the same price as for straight petroleum based unleaded fuel. I thought your answer was suggesting that transport factors and some other factors justified the same price for the fuel containing the arguably cheaper component of ethanol. Did I understand you correctly?

Mr Frilay—The transport factors at present are a problem. But we would also say, from our viewpoint, that the value of the E10 is the same as the value of ULP. It is about the same. But ultimately I think the market will probably determine matters like that.

Senator O'BRIEN—So you do not believe that ethanol can outcompete petroleum? Even with the high price of petroleum as it is now, ethanol is the same price, in your mind, as the petroleum content of your E10?

Mr Frilay—If you are saying what price it should be—

Senator O'BRIEN—No. I am asking in the context of your input costs. I think you were telling us that it is the same cost as your petroleum.

Mr Frilay—The input costs at present are high. Obviously, in looking at this on a larger scale, we are hoping that there will be cost benefits in doing it. As we are indicating, we are looking at ratcheting this up from one million litres per annum to 100 million litres or beyond. Then you are obviously going on a bigger scale, you are actually getting the logistics right and then, hopefully, the costs will start to have benefit. But this is a big step to be taking. It is not just groping at the margins; it is taking that step forward. There are various risks involved in marketing. You have to make sure that it lands right. Also, do not forget that there is of course a dilution factor. You are only using 10 per cent, and there are various other little costs in between so it is not a straight sort of translation.

Senator O'BRIEN—So it would be better if there were a higher percentage of ethanol?

Mr Frilay—I do not think I will comment on that. It has taken a long time to land the 10 per cent, so I think let us work on 10 per cent.

Senator O'BRIEN—The Brazilians would tell us that we have got it wrong and that we should be concentrating on a vehicle fleet that could use much higher quantities of ethanol, although we do not produce those at the moment. What is BP's view on that?

Mr Frilay—I think our view, at least in Australia, is to take one step at a time, so let us make the 10 per cent a success. It has got to be a marketing success.

Senator O'BRIEN—One of the Brazilian arguments on flexibility as to their flexicard proposal is that you can actually use the price of ethanol as a competition factor given the price of petroleum products. That is not available with the model that you are proposing at the moment, is it?

Mr Frilay—The 10 per cent model?

Senator O'BRIEN—Yes.

Mr Frilay—No. But I think there is enough at play in the 10 per cent model—enough challenges in that—without taking it further at this stage.

Senator O'BRIEN—Is one of the problems that, being a company with a vested interested in selling your petroleum products, the tension for you to really parlay the ethanol play in the market and see whether it can actually fly better than petroleum means you are losing a big part of your business at the moment?

Mr Frilay—No. I would not agree that we have got a vested interest in doing that. I think we have got a vested interest in turning out a product for the market. To give an example, our Queensland refinery is running flat out and we are buying in all our crude from third parties, so in a sense we are looking at additional supply. Whether it comes from ethanol or whether it comes from crude, you could say, 'What's the most logical way to go?' I think we have been open-minded on this, and that is one of the reasons why we are pursuing it so vigorously. It is about whichever is the best option for us. We are not committed to buying further crude oil from third parties. It is open.

Senator O'BRIEN—Sure. You buy from your own sources; you buy from third-party sources, in terms of petroleum products, for your refineries.

Mr Frilay—It is pretty well all from third parties. In fact, I would think that Bulwer, the Queensland refinery, would be all from third parties. So there is not necessarily any vested interest in pursuing that line. The vested interest is: what is the best outcome?

Senator O'BRIEN—So it is the primary source of the product that drives that, rather than the end product?

Mr Frilay—Yes, on the refinery side. But there is also marketing, because we want to be able to market it too. It is a cross-business thing.

Senator O'BRIEN—But you have to get a return from your refinery?

Mr Frilay—Yes, although we have to get a return from both for this to be a success. We are trying to make this work right across the board—and this goes back to some of the things Senator Nash raised—for the producer, for us, for the servo and for the customer. If we can get all of that right, then we have got it.

Senator STERLE—Let us talk about Kwinana. The crude is shipped down the coast to your refinery at Kwinana. I fill up just about every week at BP in Melville and there are three types of unleaded petrol at different octane levels. How does it get from crude oil to the different grades of fuel I see at the pump?

Mr Frilay—In Perth?

Senator STERLE—Yes.

Mr Frilay—Through the refining process—and neither of us is a technologist—you can produce a 91 octane fuel or, at a higher cost, you can produce a 98 octane fuel. There are differentials in the cost.

Senator STERLE—Where does diesel fit into the refining process?

Mr Frilay—As part of the refining process, there is a differential taking off of the hydrocarbons. The lower hydrocarbons, which come off first, include gases and LPG. Then there are the petrols, which are a bit higher up the carbon chain. Higher up the chain again are the middle distillates, which are diesel and jet fuels. They are separated at that point. Then there is further processing to take out the sulfur and all sorts of things like that. So diesel fits into the initial distillation process.

Senator STERLE—So petrol comes out before diesel in the process?

Mr Frilay—Yes. They are really all co-products.

CHAIR—Thank you very much. If you have any additional information you want to send in, please send it to the secretariat.

Proceedings suspended from 1.03 pm to 2.03 pm

CAPLAN, Mr Russell Ronald, Chairman, Shell Australia

SCOTT, Mr Peter, General Manager, External Affairs, Downstream, Shell Australia

CHAIR—Welcome, Mr Scott and Mr Caplan. While these are public proceedings, the committee may agree to a request to have evidence heard in camera or may determine that certain evidence should be heard in camera. I remind witnesses that giving evidence is protected by parliamentary privilege. It is unlawful for anyone to threaten or disadvantage a witness on account of evidence given to a committee. Such action may be treated as contempt of the Senate. The giving of false or misleading evidence may also be considered to be contempt of the Senate. If you object to answering a question, you should state the grounds on which you are objecting. The committee may determine that we would like to insist on an answer. In that case you can request to give that evidence in camera. I invite you to make an opening statement before we go to questions.

Mr Caplan—Senators have seen Shell's written submission. Anything I would say by way of introduction is contained in the submission. If it is okay with you, we would be happy to take any of your questions.

Senator STERLE—Mr Caplan, can you tell me where Shell's fuel comes from for my home town of Perth and the state of Western Australia?

Mr Caplan—Most of our fuel in Perth comes from the BP refinery. Sometimes fuel gets brought in by ship. For other parts of the state, fuel is brought in by ship most often from Singapore, but sometimes from our Geelong refinery in Victoria.

Senator STERLE—That answers a big question for me. Thank you very much. I know it was a little one, but I just wanted to know.

Senator NASH—I am particularly interested in the biofuels component of all of this. Can you outline for the committee your usage of biofuels to date?

Mr Caplan—Today we sell a product called Shell Optimax Extreme, a 100 octane fuel which contains five per cent ethanol. We sell it in close to 40 stations around Australia.

Mr Scott—Those stations are across Brisbane, Sydney, Canberra and Melbourne.

Senator NASH—That is your only biofuel use to date?

Mr Scott—Correct.

Senator NASH—What is the pricing structure of the Optimax Extreme compared to unleaded?

Mr Caplan—It is a premium product, so it is significantly more expensive than regular unleaded, as was its predecessor, Shell Optimax, which did not have the biofuels component.

Senator NASH—Why does it being premium increase the cost? The cost of the actual ethanol would seem to be a lot less. Indeed, on an E10 blend, some of the independents are selling it for a lot less than unleaded. What is it that necessitates that significant price increase?

Mr Scott—It is less a focus on the biofuel than on the niche premium product. Shell Optimax Extreme is made specifically at the refinery to give additional properties, just like Shell Optimax. It is designed as a specific fuel and then has five per cent ethanol added to it. The ethanol has very little potential price impact because it is only five per cent. The base fuel—the 95 per cent—is far more expensive to manufacture than regular unleaded.

Senator NASH—Some of the other oil companies are increasing their use of biofuels. I do take your point that you are using it there. Why are you only using it in Optimax Extreme? Why are you not using it as a blend within E10?

Mr Caplan—We have been and are currently working on the introduction of E10 in our 95 octane unleaded. In fact, it is by this mechanism that we will start our contribution to our part in meeting the federal government's 350-megalitre target. We are working on that now.

Senator NASH—When is that likely to start happening? When is that going to be rolled out?

Mr Caplan—We will begin by the end of this year.

Mr Scott—To add to that, the reason we went out with Shell Optimax Extreme was to address what has been a significant negative public perception of ethanol. We believe that in order to start selling more biofuels in the Australian market there needs to be a change in consumer perception. Our strategy as a first step was to get out there and say, 'Shell's quality fuel uses biofuel or ethanol in its very top fuel.' People can see this range and we are trying to move customers' perceptions. That is why we have taken that first step. It will be followed with other measures.

Senator NASH—I take that point. Have all the 'no ethanol' signs gone?

Mr Scott—I believe so, yes.

Senator NASH—Very good. Just on the 89 million litre voluntary target for this year—that is the bottom of the scale, obviously; 124 million is the top—how many litres of ethanol overall are used in Optimax Extreme at the moment?

Mr Caplan—I do not know the answer to that question.

Senator NASH—Could you take that on notice and get back to the committee?

Mr Scott—Sure.

Senator NASH—On that basis then, what do you see, at the end of this year, as being Shell's contribution to that 89-million-litre target for biofuels?

Mr Caplan—We see that we will meet or exceed the promise that we have given to government about our first year's contribution.

Senator NASH—Did you want to share what that contribution is with the committee?

Mr Caplan—I would prefer not to, and I will tell you why. What we have undertaken to government is that we will meet a share of a 2010 target—without giving litres, you could take our market share as being part of that 350 megalitres—and that we would start by a series of steps designed, first, to address the consumer sentiment and, second, to get it into our next grade of fuel and to move progressively. Clearly, we have committed to starting small and deliberately and, at the same time, to meeting the 2010 contribution.

Senator NASH—You say that you are confident that you will meet the expectation that government and you have agreed to. The E10 is not online as yet; you say possibly later this year. Is it all going to come from Optimax Extreme at this point?

Mr Caplan—Or from the first steps of the introduction of E10.

Senator NASH—If you do not know what the current volume is for Optimax Extreme, how can you say to me that you are going to meet the target?

Mr Scott—We are saying that we do not know the specific number. But that is Russell and me right now; we could come back to you with that number later today. We have just been back to Prime Minister and Cabinet, who are doing their six-monthly update. I recall that the submission that we made to them says that we are well on track to meet the numbers that we gave to Prime Minister and Cabinet at the end of last year.

Senator NASH—That is very good news. I note that in your submission, when considering the use of biocomponents in road transportation fuels under the heading 'Biofuels and other transport fuel options', you talk about Shell. You say:

Internationally, Shell is ... one of the largest blenders of bio-components into road transport fuels, selling nearly three billion litres in 2005, mostly in the US and Brazil where legislators favour ethanol.

Can you expand on what you mean by that?

Mr Caplan—There is mandatory use of E85 in Brazil. Prior to coming back to Australia, I ran Shell's retail business in the United States. In certain states in the United States, as you would know, there is mandatory ethanol content in the fuel; there has been for quite a number of years. And so, through the combination of what we sell in the United States and what we sell in Brazil, we sell about three million tonnes or three billion litres of ethanol content.

Senator NASH—Are you saying that the oil companies' use or production of ethanol in those countries is directly linked to the fact that it is mandated?

Mr Caplan—We do not produce ethanol in any of those countries.

Senator NASH—Sorry—to the sale of ethanol in those countries.

Mr Caplan—Absolutely; it is.

Senator MILNE—In your submission you argue that biofuels require subsidies and tax breaks to be viable. Do you regard the free CO_2 emissions that the oil industry gets as a subsidy?

Mr Caplan—I do not understand the question, Senator.

Senator MILNE—Your argument is that all fuels should compete equally in the market; I am asking: do you regard the fact that the oil industry does not pay for the extent of CO_2 emissions it puts into the atmosphere as a subsidy?

Mr Caplan—No more or less of a subsidy than any other creation of CO_2.

Senator MILNE—Do you, essentially, support a carbon tax—a price on carbon—in the current CO_2 environment?

Mr Caplan—With one qualification, the answer is: I would support a carbon tax, speaking personally for Russell Caplan, if that tax were applied equally to all emitters of carbon globally.

Senator MILNE—So what is Shell's position?

Mr Caplan—That.

Senator MILNE—So it is not just Russell Caplan's position; that is Shell's position. What tax breaks do you get for exploration?

Mr Caplan—Many.

Senator MILNE—You argue that all fuels should compete equally in the market with minimal government intervention and you imply a criticism of biofuels because they require subsidies and tax breaks. You are already getting substantial tax breaks in the market, aren't you, with your oil industry?

Mr Caplan—There is no doubt that various projects that are not economic in their own right are addressed by government and often tax consideration is given.

Senator MILNE—In the case of Shell, to argue against subsidies or tax breaks for biofuels is a bit disingenuous when you consider the extent of the tax breaks the oil industry gets—would you agree?

Mr Caplan—No, I would not agree but I hear the point you have made.

Senator MILNE—I think you were both here earlier when BP—

Mr Scott—Just me.

Senator MILNE—thank you, Mr Scott—gave their evidence. Does Shell regard peak oil as a concern and, if so, what is your best guesstimate as to when peak oil will be?

Mr Caplan—Perhaps I can respond to that. The one thing that Shell does not purport to do is predict the outcome of supply-demand balance. We simply do not know, nor do we think anybody else knows. We try to hypothesise possible scenarios going forward, and we use those to test our actions. Our view is that economics would normally work in the circumstances: the closer you get to the cessation of supply, the higher the prices get and the more that facilitates procurement of alternative supplies. We see that happening now all around the world. Oil accumulations which were previously uneconomic are now being exploited. Continuation of that will see the exploitation of oil in tar sands, in shale and in the bituminous supplies in Venezuela et cetera.

What does peak oil mean in the circumstances and when would the moment of peak oil arrive? I have no competence to answer, but it is clear that in Australia the rate of production has been declining since about 2000—I am sure you understand that. There are a variety of predictions about future production. I do not know which one of them is right, but none that I have seen gets anywhere near meeting the demand that is predicted to grow in Australia before you then begin to access oil from unconventional alternatives, by which I mean oil from coal, oil from gas or in fact oil from biomass, with which we are pretty much involved in Germany and Canada.

Senator MILNE—At what oil price do you estimate deepwater oil or tar sands would become commercially viable?

Mr Caplan—I have been at Shell for 39 years, and the answer to that has always been about twice the current price. I think it still is—I do not mean that to be a facetious answer. I think we have seen, increasingly, the industry go and find more difficult and expensive oil, always testing the limits of what is economic at the time.

That is happening today. There has always been another piece of technology or another more difficult to get reserve that has been beyond the economics of the day. And so it is today. It would have been useless to predict when I first joined the company. It is pretty much still useless to predict. All you can do at the time is make your decisions based on what you see as being economic and take a risk. The industry does nothing if not take risks.

Senator MILNE—Given that the processing of oil sands and so on is a lot more energy intensive than for light crude, for example, isn't it a worse scenario for CO_2 emissions into the future? What are the figures on that?

Mr Caplan—It does not have to be. We shall have the world's largest tar sands venture in Alberta in Canada. That is economic today. Factored into the economics are the issues associated with the energy intensity of deriving the oil. We have hopes, for instance, of developing the Gorgon gas project in Western Australia, which will require sequestration of the CO_2. We have hopes for developing brown coal into liquids in Victoria, and that will require sequestration of the CO_2. All of that is right at the leading edge of today's technology. It is more expensive than what we can cope with today, but we want to work on the technologies that will make it doable. Whether peak oil is on us or not, we have to keep pushing that and spending money to develop it.

Senator MILNE—But carbon capture and storage is not proven, is it?

Mr Caplan—Absolutely—it is not proven. There are many things that are not proven at the time that you pioneer to undertake them. It is an obvious point that I make, and it is associated with the risk that you take. It is not uncontroversial, either. All sorts of people do not necessarily agree that it should be done. 'I don't want it done underneath my property; I don't want it this, that or the other.' But we all have to reconcile those things and see if we can push this forward.

Senator MILNE—Let us assume that it does work. When would your first injection and capture take place in your current investments—the ones you have in Western Australia and Victoria?

Mr Caplan—In each case, before 2012.

Senator MILNE—So you would expect to have a successful carbon capture and storage at a commercial level by 2012?

Mr Caplan—If it is going to be commercial, and therefore if the current work on the technology and environmental issues and all of the factors that have to be brought to bear on this work, then our current plan sees us producing Gorgon gas before 2012 and would see us have in the Latrobe Valley of Victoria a coalmine, a coal drying and gasification process and a plant for the conversion of the gas to liquids—diesel, in fact—with a power station attached coming on stream in 2012.

Senator MILNE—With carbon capture and storage?

Mr Caplan—With carbon capture and storage.

Senator MILNE—Is that the Monash venture?

Mr Caplan—Yes, it is.

Senator MILNE—I may have misheard this morning, but I thought they were giving us a timeframe that took it out to about 2025.

Senator O'BRIEN—2016.

Mr Caplan—Yes. They would do that, because it is a progressive process. It would get to maturity in the period 2016 and beyond. But you asked when it would first begin.

Senator MILNE—I misunderstood. I thought that this morning they were talking about when it would begin. Never mind; I will clarify that.

Senator O'BRIEN—Where are you getting your ethanol from?

Mr Caplan—We are buying our ethanol from Manildra in New South Wales. Where are we buying the rest from, Peter?

Mr Scott—CSR.

Mr Caplan—From CSR in Victoria.

Mr Scott—And Queensland.

Senator O'BRIEN—So established plants?

Mr Scott—Established plants, yes.

Senator O'BRIEN—You have no problems with capacity? Manildra would love your business, because they have been anxious to sell more ethanol and they have been underproducing compared to their capacity, as I understand it.

Mr Caplan—As we said, our current needs are pretty small and certainly there are no current problems.

Senator O'BRIEN—Have you got any plans to expand the number of producers you buy from? Have you got any memoranda of understanding or agreements?

Mr Caplan—We are in discussion with producers. We are in discussion also with producers of biodiesel components, although we do not currently sell biodiesel. In order to be able to meet our commitments, we have to secure additional supplies. That is critical because if we put a product on the market it has to be able to be guaranteed by us in terms of its quality and we have to be able to keep a promise to our customer in terms of security of supply. Therefore, we have to have backup arrangements that allow us to do that. So we will have commercial arrangements in place.

Then we have to do what investing is necessary, and it is quite significant, in storage, handling, blending and then, judging by my US experience, a hell of a lot of work on the retail service stations. In the US, for instance, I had to clean out the tanks on thousands of service stations because, as you probably know, ethanol is hydroscopic and attracts water and, if you are guaranteeing your Shell branded product, the second you introduce ethanol into the mix you introduce a big vulnerability that you have to account for and try to offset. Other wise, your customer comes back and says, 'I used your product and my car screwed up.' All of that has to be put in place in order for us to be able to go onto the market with a Shell branded product and stand behind it.

Senator O'BRIEN—In Brazil, as I understand it, there are vehicles produced to different specifications, which they call 'flex vehicles', which are capable of taking up to 100 per cent ethanol provided they have got a subsidiary fuel tank for ignition purposes under the bonnet.

Mr Caplan—I believe that you can design a vehicle to do most things. They have been at this for 20 or 30 years in Brazil. One of the consequences of that is that the vehicle fleet has evolved over that time so that you have got the large proportion of the vehicle fleet in Brazil capable of using high concentrations of ethanol. We could do that in this country but it would take a long time to convert the current fleet over to that capability. So as it stands at the moment, the lower the concentration, the more likely it is to be able to be used in all cars.

Senator O'BRIEN—The other situation in Brazil is that it is possible to select your own mix from a 100 per cent petroleum based product to 100 per cent ethanol.

Mr Caplan—It might be. I do not know.

Senator O'BRIEN—There was a program on SBS, and I took it from your expertise about your company's business in Brazil that you will probably be aware of the circumstances.

Mr Caplan—I have extended beyond my expertise in my company's business in Brazil by what I have said.

Senator O'BRIEN—What are the economic costs of modifying a vehicle to that extent? Have you any idea?

Mr Caplan—No idea.

Senator O'BRIEN—Does Shell know?

Mr Caplan—I do not know. I presume that General Motors or Ford or Toyota would be able to tell you that.

Senator O'BRIEN—So, as far as Shell is concerned, that is a regulatory issue?

Mr Caplan—It is an economic issue. I can tell you that if an owner of a vehicle that is not designed to take that much ethanol uses a fuel which contains that much ethanol there are consequences and potential damage. From a Shell point of view, the first person that the owner would look to to put things right would be Shell. We sold them the fuel. So we have a very strong interest from our brand point of view in making sure that we do not attach our brand to anything that is going to lead to that.

Senator O'BRIEN—What is your liability if I go into your service station with a conventional fuel vehicle and put diesel into it?

Mr Caplan—If you put diesel into a petrol car, nothing.

Senator O'BRIEN—You have no liability?

Mr Caplan—None.

Senator O'BRIEN—So, if it is properly labelled and someone makes a catastrophic error with the fuel that they put into their car, it will be their liability?

Mr Caplan—If you put water into your petrol tank, diesel into your petrol tank or petrol into your diesel tank, it is so wrong that you might form one view; but putting petrol with one sort of ethanol component into your petrol car is likely to be seen differently. I would be fairly sure that we would get plenty of pressure. Time will tell. I hope we are not in that position, to tell you the truth.

Senator O'BRIEN—You have been around long enough to see the introduction of unleaded petrol. Service stations had little cards which indicated which cars were suitable for unleaded and which were not.

Mr Caplan—Correct.

Senator O'BRIEN—The motorist was required to exercise their judgment on that.

Mr Caplan—Correct.

Senator O'BRIEN—So what is the difference?

Mr Caplan—I can see a difference, but if you cannot, that is up to you.

Senator O'BRIEN—Tell me what you see is the difference. That is why I asked you the question. You are here to give your views. I am here to ask you the questions. What is the difference?

Mr Caplan—If all petrol were mandated to have a high ethanol content and a very small portion of the car population were able to use it without concern, that would seem to be a significant mismatch. In the case of unleaded and leaded petrol, as you recall, we equipped the nozzles on the pumps differently. The receptor in the car was of a different diameter, so there were measures taken to try and protect.

Senator O'BRIEN—But that applied to vehicles manufactured after a certain time. There were vehicles manufactured before that time that could still take unleaded petrol. You were required to look at the chart and see which vehicles could take that petrol and were suitable for that petrol.

Mr Caplan—You are correct.

Senator O'BRIEN—That was introduced with an ultimate phase-in for much more complete utilisation.

Mr Caplan—You are correct.

Senator O'BRIEN—Do you see any reason that sort of system would not work with the introduction of E10 blends, for example?

Mr Caplan—I do not see a problem with E10 blends at all.

Senator O'BRIEN—If vehicles were modified over time and design rules were changed, vehicles could cope with higher quantities of ethanol?

Mr Caplan—Over time with higher quantities of ethanol, fine. The mathematics of maximising ethanol use for me would favour the smallest quantity in the maximum number of cars—so all cars could take five per cent ethanol. If all gasoline in Australia had to have five per cent ethanol, you would sell a lot of ethanol.

Senator O'BRIEN—How much do you reckon we would sell?

Mr Caplan—You would sell five per cent of the total gasoline sold.

Senator O'BRIEN—You probably know what the market is better than I do.

Mr Caplan—So five per cent of 20 billion litres. The mathematics is obviously in favour of a small quantity in a lot of gasoline.

Senator MILNE—Or a large quantity in a lot of gasoline.

Mr Caplan—That avoids the issue of dealing with the capability of the fleet of cars. If you want to add to the potential downside, then you mandate a large quantity. Then you have to deal with the impact on the cars that cannot take it.

Senator MILNE—Then you could change over your vehicle fleet.

Mr Caplan—That is what you could do. The average age of the Australian car is 15 or 12 years. So, over time, as in Brazil, the vehicle fleet will change, if that is what government chooses to do.

Senator O'BRIEN—And you would be right to say, of course, that we do not have the capacity at the moment to produce enough ethanol to supply anywhere near five per cent of 20 billion litres. We would have to import a lot, in other words.

Mr Caplan—You would.

Senator O'BRIEN—What is Shell's knowledge of the lead time for us to ramp up our production? Presumably you are in discussion with potential producers.

Mr Caplan—I have zero to contribute on that. I simply do not know.

Senator O'BRIEN—Given the changes to the tax regime that have just passed through the parliament, what is the future of biodiesel?

Mr Caplan—We are negotiating with suppliers of biocomponent, so we will put ourselves in a position to introduce biodiesel. Again, there are a variety of sources of the biocomponent and we need to be technically clear that we can reliably and sustainably put our brand on it. There are other sources of diesel—today, for instance, we produce diesel from gas; the diesel from the Monash project would come from coal—all of which, in our view, need to be pursued.

Senator O'BRIEN—I am not going to disagree with you. I am interested in where you are headed. Will you be going to a five per cent, 10 per cent or 20 per cent mix of diesel in the product that Shell will be marketing?

Mr Caplan—I do not think we have landed on the percentage, have we Peter?

Mr Scott—Our current position in Australia is five per cent and that is predominantly because the majority of the vehicle manufacturers we have talked to say that is okay. But there is some debate as to whether 20 per cent would be okay.

Senator O'BRIEN—It now requires the meeting of a certain standard to attract the full excise relief in certain circumstances. How is that motivating Shell, or is it not something you are aware of?

Mr Scott—We are aware of it through the latest tax bills that have just been passed. But that largely affects the people who are selling the biodiesel to us.

Mr Caplan—Our concern is about the performance of the blended product in diesel engines. There is, as we understand it, no national standard today that addresses that issue. There is a standard for mineral diesel and there is a standard for the proportion of biocomponent. But there is no standard for what the blended product should be and how it should perform in terms of density and various other technical components that are critical to know in order to be able to make available to our customers a reliable product on a sustainable basis.

Senator WEBBER—I would initially like to go back to some of the issues Senator O'Brien has raised. Comparing this to unleaded petrol, is it fair to say that those changes were made because government mandated them and not because companies decided out of the goodness of their hearts that unleaded petrol was going to be better, and that that is what the transitional phrase was about as well? Surely, companies like Shell would have the capacity to change if we mandated a change in fuel as well and had a significant phase-in period. We manufacture in Australia components for cars in Brazil and export them, so our local economy can obviously deal with this problem. You said in your submission that you have spoken to the Department of the Environment and Heritage about going to a slightly higher density fuel as a way of increasing indigenous production. Can you tell me where we are at with that? When can we expect an outcome one way or the other and what impact will it have if the department ticks off on that?

Mr Caplan—I do not know exactly where we are at with that, but it could potentially make a two to five per cent difference in the output of our refineries. Those discussions are ongoing and the department has not given us an indication of where they feel that discussion might land.

Senator WEBBER—Are there any negative consequences of that?

Mr Caplan—There are environmental issues associated with that, in that higher olefins could contribute to the precursors to photochemical smog, which is an issue that is generally requiring management in our community. That is not to say that it cannot be managed and is not being managed in other respects, but there are trade-offs associated with it.

Senator WEBBER—There is another issue, on the positive side. You talk about a program that you have called Fuel Stretch, which, I must admit, I have not heard about. Could you tell me a bit more about that?

Mr Caplan—You will have to deal with our marketing department about that. It is not anything more than a commonsense list of things that a driver might do to be more economical

in their driving. We have just been associated with a Melbourne couple by the name of Helen and Michael Taylor. They have driven around the world in a Volkswagen Golf—a standard car that they bought from a showroom. They came to us and said, 'If we drive around the world on less than 50 tanks of petrol, will you pay for it?' We said, 'You couldn't possibly do that.' In fact, we brewed a type of petrol for them which, by the way, we now sell in Australia. They drove through 25 countries, 30,000 kilometres, on 24 tanks of petrol. It took them 78 days. They deserve a prize for being locked in a car for 78 days with their spouse, but, having managed to survive that, they drove around the world in, remarkably—

Senator WEBBER—I could not survive that challenge. I do not know about the 24 tanks of petrol; it is the 78 days that I have issues with!

Mr Caplan—I bore you with this story only to tell you that what they did, in terms of eking out their fuel, was nothing more than being careful, sticking to the speed limit and making sure that they did not use the airconditioner—stuff that is not rocket science. The outcome was that they were doing something like 1,200 kilometres to a tank of petrol in their Volkswagen Golf.

Senator STERLE—How big was the tank?

Mr Caplan—It was a standard tank.

Senator STERLE—Which is what size?

Mr Caplan—I think it is 60 litres—something like that.

Senator WEBBER—You are talking to a former truckie.

Mr Caplan—The tank is not big. The issue is that there is a lot of self-help available to people. It is a latent resource.

CHAIR—I want to go back to oil prices. ABARE say that the oil price will come back to $30 a barrel. What do you think about that? Are you working on that price? I can see a slight smile.

Mr Scott—It is not an unexpected question!

Mr Caplan—If I knew what the price was going to be, I would not be working for Shell; I would own Shell. I can tell you how we do our economics.

CHAIR—I want to know what you do in your modelling.

Mr Caplan—We test our projects at $25 a barrel for oil and consider what they might look like at $40 and $60 a barrel for oil. Do we say that one or another of those outcomes is more likely? No, we do not. We attempt to see how resilient they would be in a world with that sort of oil price. That is what we do. We rule out projects that we do not think are resilient at low prices, especially when projects have to be long lasting enough to go through several cycles.

I do not know if you know anything about the North West Shelf project in Western Australia. I negotiated the prices with the buyers for that. That project was on the drawing boards at $25-a-

barrel oil and, virtually the day after the commitment was made by the investors to go ahead, oil fell to $10 a barrel. The project did not stop but it was substantially re-engineered, so it ended up requiring two, not three platforms; one, not two trunk lines; and air cooling, not water cooling. The cost of the project came down, driven by the prevailing oil price and now, at $70 a barrel, it looks like a pretty good project as cash goes, but its rate of return is lousy. It never got over $10 a barrel for its first 10 years. You have to place your bet. If you place a multibillion-dollar bet, in that case, or in the Monash Energy case et cetera, you need to be able to protect yourself as an investor against the downside, and that is what we try to do.

Senator NASH—Going back to E10, which you think is possibly coming online at the end of this year, obviously you are in discussions with producers. Is there anything concrete? Have you written any contracts for that as yet or are there any MOUs in terms of volume of ethanol to be used for that E10 blend?

Mr Scott—We are in discussion at the moment and we think that when we need to we will be able to sign up the volumes that we need.

Senator NASH—In that first 12 months, what are you hoping, volumetrically, you will be able to use in the E10 blend?

Mr Scott—Again, that will be towards our commitment to the government, but it will be a substantial increase on what we have got presently in the market.

Senator NASH—Presently, there is no E10 blend at all so it will have to be substantial—I am talking specifically about E10.

Mr Scott—I am talking about the amount of ethanol we sell.

Senator NASH—Obviously, at the end of the second year that target is going to be substantially higher again if you add the first two together and you have not met anything or only a very small amount the first year. You do not have any rough figures at all for what you would like to see in that E10 blend by the end of next year?

Mr Scott—I guess Russell answered it by saying that we are looking to our contribution to the 2010 target, and we have got to build up profile for that, and we will be on track for our 2010 target.

Senator NASH—So you do not want to say?

Mr Scott—No.

Senator NASH—Why not?

Senator STERLE—We will not tell anyone!

Mr Scott—I thought this was a public hearing.

Senator NASH—My question is: why should we believe that you have a commitment if you are not even prepared to say what you are hoping to get?

Mr Caplan—I will tell you why. We have made a commitment to the government to play our part in meeting that. We have undertaken to meet our commitment, and I have already said that you could assume that that is no less than our market share of 350 megalitres.

Senator NASH—I understand that completely. I am a little sceptical about you actually meeting the target.

Mr Caplan—If you are sceptical, then I cannot be sceptical. But what I do not want to do is engage in a month-by-month or year-by-year discussion over whether we are exactly on target or ahead of some commitment that I would like to discuss in public. So the only answer I can give to that, Senator, is that we have undertaken to meet our target. We will meet our target. All of the preparations that we are making are consistent with us being able to meet our target which we told the department—

Senator NASH—Annually? You are not just talking 2010; you are talking annual targets—meeting every single annual target?

Mr Caplan—That is correct. And there is a build-up involved, but I do not want to be debating in public the nature of that build-up compared with somebody else's build-up. We would regard that as consumptive of time and energy when we have said we will meet that target.

Senator NASH—It seems strange that, if you have the annual commitment and are quite convinced that you will be able to meet the target, you have a problem in talking about it. There is no downside for you, is there, because you are actually going to meet it, as you say, definitely? So what is the downside in speaking about it?

Mr Scott—In the session this morning there was a company that put numbers into the public domain which are higher than numbers that anyone else has put into the public domain, and it was basically lampooned.

Senator NASH—If nine million litres for the first year is the top end of the scale, I am really worried.

Mr Scott—The point is not having to debate this publicly all the time. We have made our commitment. The big number, which people are looking for, is the 350-megalitre target. We have said we will play our part in that.

Senator NASH—The big numbers are the annual targets because, if we do not do those, there will be no development of the industry.

Mr Scott—I repeat: we will meet our 2006 target and we plan to meet the rest of our targets.

Senator NASH—Excellent. I look forward to calling you up when you meet it and saying congratulations. Why would Shell want to use biofuels? Surely it would be more cost-effective for you to use your own product than buy somebody else's to put in a fuel mix?

Mr Caplan—We do not make all of our own fuel now anyway. Australia does not make all of its own fuel; 20 per cent of what we sell is imported. We buy fuel on the open market, just like we would buy ethanol on the open market. At the end of the day, at the margin that we are talking about here, we are virtually indifferent as to whether we buy ethanol or some other fuel component, from an economic point of view, given that the ethanol that comes in to us is coming in at a price not dissimilar to the sort of price that we would buy fuel for, once you add on the cost of handling, the cost of blending, the cost of storing et cetera.

At the end of the day, it is a matter of relative indifference, economically, whether you use ethanol or fuel. But it is clear that the price of ethanol, and the price of other components of fuel, can move very differently. If at a certain moment in time it is one way then, at another moment in time, it might be different. I spoke to my successor in the United States a day or two ago to ask him what the current price of ethanol into his fuel mix was versus fuel, and how that has evolved. He said what I knew to be the case before, which is that it is virtually no different. When you look at the tax benefit to the ethanol producers, you see that you end up with ethanol going into the mix of fuel at roughly its octane equivalent price. What is the price to the consumer? In fact, ethanol fuel is little higher to the consumer in the United States right now because of the differential movement of petrol and ethanol. That does change from time to time, but not much.

Senator NASH—Going back to your comment, Mr Scott, about what the oil company earlier put on record as their likely capacity for this year, I think you said they were at the upper end of the scale. What confidence should the committee have that that 89-million-litre biofuels target will be met this year?

Mr Scott—Let me clarify my comments. My comment was around their public statement on the 200-megalitre biofuels, not around their comment around 2006. They have publicly come out and said they have X number of megalitres over the years to 2010. I thought I recalled that there was a comment that that was still not enough. Perhaps I misheard that comment—

Senator NASH—I think perhaps you did.

Mr Scott—but it certainly was not in reference to the statement of their amount for 2006.

CHAIR—Thank you for appearing today.

Mr Caplan—Thank you, Senators.

Mr Scott—Thank you very much.

[2.55 pm]

LOVERIDGE, Mr Keith, Energy and Water Officer, City of Whitehorse

COTTRELL, Mr Timothy Edwin, Senior Traffic Engineer, Wyndham City Council

ROBINS, Mr Ian Christopher, Chair, Steering Committee, Western Transport Alliance; and Chief Executive Officer, Wyndham City Council

CHAIR—I welcome representatives from the Western Transport Alliance, the Wyndham City Council and the City of Whitehorse. These are public proceedings, although the committee may agree to a request to have evidence heard in camera or it may determine that certain evidence should be given in camera. All witnesses 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, they may state the ground upon which they raise that objection and the committee may determine whether it will insist on an answer. If the committee does insist on an answer, the witness may request that the evidence be given in camera. I invite all of you, since you represent different organisations, to make brief opening statements. We will then ask you some questions.

Mr Robins—I might start from the viewpoint of Wyndham City Council and the Western Transport Alliance. I am the chief executive of Wyndham City Council and I chair the steering committee for the Western Transport Alliance. The issues that we want to address are the best use of oil fuels as distinct from the question of alternate transport fuels; that is not our area of expertise. Wyndham City Council is in an outer metropolitan municipality to the west of Melbourne. It is a designated growth area with currently about 120,000 people and it will grow to around 250,000 people. The Western Transport Alliance is a group consisting of six municipalities in Melbourne's west, Melbourne City Council, a number of transport companies, the Victorian Transport Association, the Transport Workers Union and some peak bodies in the transport field.

We have some similar issues and challenges in terms of what we are facing, and the alliance is very concerned about transport links between the west and Melbourne because of the growth issues. We see that as really having potential in terms of fuel consumption—some of it relating to congestion and some of it relating to public transport—in the future. So we are looking at ways of minimising usage as distinct from using alternative fuels.

The key issue from our point of view is that the rail network is very much at capacity. There are issues to be thought about in the future as the area grows as to what that means in terms of how you efficiently get people into central Melbourne from a transport viewpoint. There is a hard copy of a PowerPoint presentation which we could distribute that has a lot of data in it that might be helpful. We will leave that with you.

The fuel usage issue is directly related to the travel demand, the effectiveness and the efficiency of accommodating traffic issues and the like. Our submission really deals with the

significant growth. That growth is substantially beyond that which was foreseen. Going back some six years ago, the population projection for Wyndham—as to where we would be at this stage—was the mid-90,000s, heading up to around 116,000 by 2016. As I said, we are now a city of 122,000 or thereabouts, so there is quite a significant difference in travel patterns.

We face challenges in terms of the rail network. North Melbourne station and the City Loop in Melbourne are key issues. In terms of the road network, there is the Westgate Bridge and the Westgate Freeway—there are some key questions there. The challenge is really about longer term infrastructure planning. There is congestion and fuel usage, and, obviously, issues around social, economic and environmental implications come into those questions. The submission that we have provided talks about growth and those kinds of issues, as well as the constraints that are being faced. There are some general comments on congestion considerations and some thoughts on planning for transport infrastructure. I will leave it at that. I am mindful that you need to hear about the Whitehorse submission. The issues that we have provided are probably best expanded on with questions.

CHAIR—Mr Loveridge, would you like to make an opening statement?

Mr Loveridge—Yes, I would. I have prepared a statement. Our submission, which you probably have in front of you, came from a number of areas within the City of Whitehorse, including from councillors, managers and the EcoVision team, of which I am a part. I am the Energy and Water Officer at the City of Whitehorse. I look after things such as water conservation and quality issues, as well as energy conservation and quality issues. I sometimes get involved with transport issues in the City of Whitehorse. In fact, we had a Sustainable Transport Week—which was probably the first in Victoria for a local council—last year and that was very successful. It highlighted issues about transport, car use and that sort of thing.

I would like to tell you about the City of Whitehorse. For those of you who do not know where we are, we are on the opposite side of Melbourne to the City of Wyndham. We are in the outer eastern area, about 15 kilometres to the east of the CBD. There is predominantly residential land in Whitehorse. The estimated population is 145,000, so we have quite a large residential population. We have 78 retail and business centres in the municipality. The city contains several large education and health institutions and we have the biggest concentration of office space in Melbourne, outside the CBD and St Kilda Road. Industrial activity in the city is a highly important part of the regional economy. We are served by a network of arterial roads, including the Eastern Freeway and the soon to be completed, we hope, at some stage, Mitcham-Frankston Freeway. That will be completed in around 2008. The Mitcham-Frankston Freeway comes into a section of our municipality.

From a local government perspective, a number of important aspects are inextricably linked to the question of alternative fuels. Nature shows us every day that there is strength in diversity. A monoculture mentality to oil dependency is clearly unsustainable. Carbon dioxide emissions from the transport sector in Australia have grown by 23 per cent since 1990—that is from the 2004 emissions inventory that has just been put out by the Australian Greenhouse Office. Given updated predicted global warming scenarios being aired in the media and in the scientific world as we speak, there is an obligation to address this most serious threat to all living beings. Air pollution continues to be a major problem in most capital cities. It is associated with diesel trucks and buses and our obsession with cars. Congestion is said to cost industry millions of

dollars, yet we continue to build more freeways—freeways that build up almost as quickly as they are built. 'Transport: the future is clearer', a report by Peter Manins from the Division of Atmospheric Research at the CSIRO, was put out in 1997. It talks about growing urban pollution emissions. Even though emissions management is a lot better than it has been, because we are putting more cars on the road and building more freeways, we are actually going to be in a worse state than we were in a few years ago.

In the City of Whitehorse, we envisage a two-tiered approach to addressing the issues around securing our future transport energy requirements. Regarding sustainable transport, we think there needs to be a major push from all levels of government to invest in sustainable transport infrastructure, including bike power, safe walking paths and, most of all, public transport. We feel that public transport is a very important issue in the outer suburbs of Melbourne—in the east, the west and probably the south as well. By moving people to the slowest form of transport, which is public transport, it very quickly becomes the fastest form of transport because you effectively reduce congestion. When you take people out of cars and put them on public transport, you reduce congestion on the roads. It makes so much sense.

There is much pressure on the state government to upgrade public transport in the outer east, particularly in the form of rail services. For public transport to be utilised effectively, it needs to be convenient, reliable, safe and fast. According to Peter Newman and Jeff Kenworthy, who wrote this very informative book called *Sustainability and Cities*, and I recommend that anyone in the transport sector get a copy and read that book—

CHAIR—They are excellent Western Australians.

Mr Loveridge—And you are obviously very biased! That is okay, as so am I—I cannot speak highly enough of those two gentlemen. According to them, a double-track light rail system occupies 50 times less urban space than the highways and parking needed for cars. That is an incredible statistic. Road building does not save fuel or travel time, in spite of what oil companies may tell us. A detailed case study of Perth demonstrated a 30 per cent increase in travel as congestion was relieved. A 1994 UK royal commission on environmental pollution points out that building roads generates traffic. One estimate is that 40 per cent of the traffic on the M25, which is London's orbital road, was generated by the new road. The commission recommended that Britain's $19 billion road-building program should be halved and that the money should be spent on improving public transport. In a UK study in 1993 that examined a number of road-building projects, the conclusion reached was that there is simply no evidence of the claimed link between access and employment or economic prosperity. The emperor simply has no clothes.

The second tier that we looked at in Whitehorse was alternative fuels. We see merit in encouraging conversion of the larger transport vehicles, such as buses and trucks, to LPG and compressed natural gas, CNG. One of the major parts of our submission was about CNG. It has been used successfully in a number of countries for transport. I do not know whether any of you have read about the city of Delhi converting buses, taxes and rickshaws to CNG. They converted the whole of their fleet to compressed natural gas. That was mandated by the government in order to address issues of air pollution in Delhi. It has been so successful that other cities are looking at that particular model. According to reports, the cost of commuting in personal vehicles, autos and taxis has come down, as compressed natural gas is much more economical

than conventional fuels. The use of CNG in vehicles has also led to a considerable reduction in air pollution.

Current gas reserves in Australia have been estimated at between 90 and 105 years worth. Measure that against our oil reserves and it can be seen where our energy security might lie. We would also not be at the mercy of the effects of Middle East wars or oil price fixing. Rebate incentives for LPG and CNG are necessary in order to encourage uptake as well as an adequate refuelling infrastructure, which we lack so badly at the moment. We would also like to see more government support and encouragement for hybrid vehicles and electric vehicles in the form of tax incentives. The City of Whitehorse has plans to purchase a further 15 hybrid vehicles in the coming couple of years.

Just on the subject of electric things, an electric bicycle costs less than 10c a day to run for up to 50 kilometres. Most of the travel around the suburbs is probably less than 50 kilometres a day. We have such lovely weather in Australia—not so much in this area or in Tasmania, but in the northern states. Why can't we use electric bikes?

Senator WEBBER—The Tasmanians are getting upset now!

Mr Loveridge—Sorry, Christine. I spent three months in Tasmania. It is a beautiful place.

Senator NASH—Good recovery!

Mr Loveridge—New battery technology has reduced the size of batteries, and today's electric vehicles can reach speeds of 130 kilometres an hour with a range from 90 to more than 200 kilometres. Between 1890 and 1910, there were many hybrid electric cars and four-wheel-drive electric cars. We can only surmise about their demise.

To summarise, we look at security of supply. We think that is very important. We also need to dramatically reduce our dependency on oil and encourage the use of alternative fuels by providing incentives such as tax breaks and rebates. We definitely need more support from the federal government on public transport infrastructure. I believe that the Commonwealth can actually support state and local governments on public transport infrastructure. We must stop the funding of city freeways. There is enough research to demonstrate the futility of expanding your road network. We must encourage programs that focus on reducing transport fuel demands. The Cities for Climate Protection Program, run by the International Council for Local Environmental Initiatives, is a really good example of what can be achieved at the local level as to a sustainable transport unit. That is the end of my submission.

CHAIR—Thank you for that. We will proceed to questions.

Senator NASH—One of the things that have come up a number of times is the impact of increasing fuel prices on outer metropolitan suburbs. I assume this applies as well to Melbourne and the suburbs down here. How do we address the public transport issue? I know that you have just referred to federal, state and local governments all working together—which in Utopia would probably be a great thing. If we are going to seriously address the public transport option, how do we do it? There seems to be so much difficulty not only in getting cooperation so that we can have a long-term plan to do it but also in educating users that public transport is an option—

and certainly Sydney has some difficulties with the way that its transport network runs and also with safety issues, which have been addressed to some extent but not necessarily enough to alleviate concerns. I do not mind who answers those questions. I am just raising those issues for your views.

Mr Robins—I will approach those questions from the point of view of Wyndham City Council and Keith might have a viewpoint on behalf of the City of Whitehorse. In terms of the journey to work, the 2001 census showed, from Wyndham's point of view, 6,498 as the number going to central Melbourne, 18.3 per cent; for Hobsons Bay, which is between Wyndham and Melbourne, 11.9 per cent. So we have in fact a very significant number of people in the workforce that go to Melbourne for work. The scenario as far as public transport is concerned is that in recent years—and I am not the one who has the full details of this but we do know this—public transport usage has increased significantly. We now have a situation where it is essentially standing room only on trains in the morning peak hour before they leave our municipality, which is an outer municipality. That means anybody else getting on is then standing. The standard train load—and I guess it is an arbitrary standard to some degree—is around 798. That is exceeded on some trains in the morning peaks. The scenario through to North Melbourne station—and Tim might be able to give me updated information—is in the order of something around 23 to 25 trains in the morning peak. The information we get is that with some smart signalling and improvements we can get to around 27. On current projections, by 2020 we will need 40. So there is a real question as to how this happens, and that is one of our real challenges and difficulties. If you think about articulated buses on the freeway, you need about eight or nine buses to a train in terms of equivalent numbers. That in itself has challenges. The underground loop in Melbourne has got capacity limitations and possibly the answer to that is not having so many trains going through the loop and looking at other ways of handling it.

The other question that is a huge issue for the west is freight access into the docks. For long haul, rail makes a lot of sense. For short haul around Melbourne it is somewhat more difficult. Container parks are struggling. It would be interesting for you to get some information from CRT, which set up a container park within the west. The understanding that we have is that it is not working out financially in the way that they had hoped and there are some challenges with that. In the west, rail capacity for passengers is an issue and the impact of freight into the port is an issue.

You asked about how we can go forward. I am not going to suggest that local government is going to be a big player in this scene because we just do not have the scale or the capacity. But one of the issues that may be worth considering is the role of the Commonwealth in rail transport—and I guess freight would be the most appealing area. Somehow or other we have to start making sense out of these issues or in 15 or 20 years time we will start creating our own grief in terms of congestion and the problems we will have created.

Senator NASH—I think local council has a very good grasp of those communities, and it is interesting to hear local councils from Perth to Sydney putting forward exactly the same views about this.

Mr Cottrell—You raised the issue of the price of fuel and its effects. Certainly, in outer areas the price of fuel and the cost of driving your car can go up but, if you do not have a public

transport alternative, you just have to pay for it. That is the situation in our area, where the bus frequency is 40 minutes in peak hour. Does that give you an alternative travel mode to your car?

Senator NASH—That is exactly the point.

Senator MILNE—As Senator Nash said, we are hearing the same things from local government all over the country. The issue of integrating urban planning with public transport is critical. Whilst we constantly hear that we must have more provision for public transport, we are not hearing that we need limits to the size of cities—the physical space—so that we can plan for public transport. If we keep allowing extended low-density development we are never going to be able to adequately plan public transport. I would like to get your views on that. Regarding the issue of Commonwealth involvement, it is very clear that just about every city in Australia—probably not so much Perth, as it has done it on its own; we will concede that for now—needs major investment in public transport. I see that the Victorian government has its 2030 target of getting 20 per cent of people out of their cars and onto public transport. But, whilst the targets are there, the money does not seem to be there—and then there is the issue of Commonwealth-state relationships. One proposal from another witnesses at these hearings is that we need a special COAG process to deal with public transport infrastructure in Australia cities and to get some real figures on the table from state governments. I am interested in how much progress there has been in Victoria on the 2030 vision of getting 20 per cent of people onto public transport. Where are you up to on that? I am also interested in local government planning—containing cities so that we can plan—and your response to the COAG idea.

Mr Robins—Melbourne 2030 is very much a vision about land use and transport in Melbourne. It is quite strong on land use and, I would suggest, extremely modest on the transport vision. The state government, to its credit, has recently published a transport statement which goes part of the way towards addressing that issue but focuses on the more manageable challenges rather than the visionary and long-term challenges. I think you would understand that, when you are looking at a 10-year vision, that is probably not surprising and one should not be too critical of that in that context.

Progress has been slow in terms of the 20 per cent by 2020. Melbourne's rail network is centred fundamentally around central Melbourne, with a whole group of what are called the northern lines, and the southern or eastern lines—I am not sure what that side is called. But there is quite a funnelling, and it needs structural rethought as to how you might go about that. Tim might be able to help me with public transport use within Wyndham, but I think it is probably in the order of four per cent. So it is a long way from the 20 per cent. But you would reasonably expect that you would get higher usage in central Melbourne and that it was an overall target. The generous way of putting it would be to say that 20 per cent by 2020 is very much a stretched target and that a lot would need to happen to achieve it.

Your comment about urban densities and the like is very much reflected in Melbourne 2030. One of our difficulties is that the state's projection of future population growth reflects what the state desires to achieve, but the market is a very different creature from the planned scenario. The increase in density in middle Melbourne is simply not happening. At this stage, 55 per cent of the growth in the west is supposed to be in greenfields. Recent figures that we prepared suggest that it is well in excess of 85 per cent. That is why our numbers are continually high. There are affordability questions and the like.

As to your suggestion about COAG, from our point of view we would be very supportive of anything that looks at the issue seriously, puts it on the table and gets some clear direction. We understand the issues about who pays, how that is shared and all the rest of it; but, fundamentally, we see that there is a substantial problem coming unless this issue is responsibly taken on and addressed. It would be very simplistic for us to say that who pays is a question that needs to be dealt with separately, but until there is some vision and solution you cannot cost it or even consider who might pay.

Mr Loveridge—We concur with your views about COAG. Public transport issues within Australia definitely need to be addressed in some central way, not just by individual cities doing their own thing. I commend Perth for doing its own thing, of course; but not every city has the will or the wherewithal to do that. I commend that type of infrastructure set-up.

This is definitely linked to land use planning issues. The City of Whitehorse used to be a rural area but we are not anymore. We have been overtaken by outer eastern suburbs such as Croydon and Lilydale. Once the EastLink freeway goes in, there will be even more pressure put on places like Healesville. Healesville is a country town, but very soon it will not be a country town. There is no train service to Healesville. There is only a train service to Lilydale—that is as far as the line goes. Again you have this pressure on these outer suburban areas. We have this rural-urban interface that suddenly becomes an urban area, and then we have all sorts of planning issues not only with agriculture but also with transport.

How do we stop development? I do not know. It is a land use issue—that is for sure. I guess it is a state government issue as to how it addresses land use issues in areas like that. The 2030 strategy is trying to address those sorts of issues. In the City of Whitehorse, we are looking at issues of higher density around transport interchange modes, and we are getting all sorts of problems with regard to high-density living. People who are living in an area are saying, 'We don't want high-density areas where we have been living for the last 20 years.' So you have this social aspect to the issue as well. Alternative fuels is about an awful lot of things, as you have probably found by listening to all the submissions that have been presented to you.

My understanding of the 20/20 initiative—the 20 per cent by 2020—is that we are out by about nine per cent across Victoria. At all the conferences and seminars that I go to, everyone starts to shake their head when they talk about 20 in 2020. No, they do not think it is achievable.

Who knows what is around the corner. If we suddenly make public transport free, I am sure it would be achievable. Mr Batchelor tells us that the infrastructure is not there to carry the number of people on public transport if it were made free. We have to address infrastructure problems, for sure. They tell me that there were more trains going through Flinders Street station back in the fifties than there are now. It is possible to actually put more trains onto these train lines. But who is going to pay for the trains? We have privatised public transport. Do we put that back into the public sphere? Do we bite the bullet and put public transport back into the public arena or do we leave it as it is and just hope that something is going to happen?

Senator O'BRIEN—Should we structure the pricing for public transport so that at times when it is overloaded you pay more and at the times when it is underutilised you pay a lot less or nothing? Is that what you are saying?

Mr Loveridge—No. When the Commonwealth Games were on, public transport was free and public transport coped reasonably well with the Commonwealth Games. It is possible to actually have public transport utilised fully and still carry that number of people.

Senator O'BRIEN—If you can manage the times that people use it.

Mr Loveridge—Indeed.

Senator O'BRIEN—I think one of the submissions talks about overutilisation in the peak times.

Mr Loveridge—Yes, indeed.

Senator MILNE—I was not aware that public transport was free during the Commonwealth Games.

Mr Loveridge—For ticket holders it was free.

Senator MILNE—I see.

Mr Loveridge—And they actually talked about the number of cars that were off the road during that period of time.

Senator MILNE—Has there been an assessment of the impact of that number of people being able to travel free?

Mr Loveridge—There probably has been, but I am not aware of it. I suspect that Metlink or Connex would have done something.

Mr Robins—From the anecdotal information we get, the question about real public transport usage is not so much about fares but, rather, frequency of service, comfort and those sorts of issues.

Senator MILNE—Convenience.

CHAIR—Quality and safety.

Mr Robins—Yes, so that is the question. The comment that infrastructure is limited in capacity to take extra numbers is definitely a huge issue at this stage. We are mindful that our population is going to grow. At the moment, Wyndham is one of the fastest growing municipalities in the country, and Melton, which is very close to us, is equally a very fast growing municipality. It is putting pressure on the same lines, and that is why we are saying that we just need more capacity.

Mr Cottrell—In respect of that and in answer to your question about some of the funding, I would add that the issue of network capacity for something like the northern group of lines and the movement through North Melbourne is supposed to be one of the biggest constraints to the actual timetabling of the whole network. I would suggest that if there is a large cost in terms of

infrastructure required for that, then maybe that is where the federal government could actually provide funding. We are not talking about the federal government providing new bus services and that sort of thing. But if there is a major infrastructure item like that, like North Melbourne et cetera, then maybe that is where some assistance could be provided.

Senator MILNE—In the smaller European countries, they do limit the size of cities. They just say: 'That's it. We won't have any agricultural land left to do anything and the amenity of the landscape will also be affected.' This is particularly so in the Netherlands. When you fly over Europe, you see totally contained villages and towns and so on. It seems to me the problem here is that local government, on the one hand, wants help with public transport infrastructure and, on the other hand, is happy to see urban sprawl because it increases its rates base and so on. Has local government ever discussed the trade-off whereby if they get help with infrastructure they would actually limit the physical footprint of the projected growth? That is one of the keys to what has happened in Perth. They had a plan, and at a point they said: 'That's it. We're not going beyond that.' Therefore, they were able to plan all the transport and the density of development within that. It seems to me that is the problem: we could come in and fund the infrastructure now, but in 10 years the urban sprawl might be out another 100 kilometres somewhere. Has that sort of trade-off been discussed?

Mr Loveridge—In my role as water and energy officer, Senator, I am not privy to that sort of information.

Mr Robins—From a Wyndham viewpoint, no, it has not been discussed. Melbourne actually has five growth areas, and we are one of them. There are, I guess, some more fundamental questions than at the local government level. We are not interested in growth in the sense of simply providing a stronger rate base, because with that comes a whole heap of infrastructure and social challenges. We are much more interested in quality rather than quantity. From that point of view, I would hope that remains the case. The question that I think you are really asking gets centred almost back to Australian society, where we seem to have a real focus on major cities. You are probably a little bit different in Tasmania.

Definitely, from that point of view, all the drivers about Melbourne at this stage seem to be getting bigger; the market is very much about sprawl. As I said, the objectives of Melbourne 2030 are not being achieved. There is probably a range of factors in that, such as cost. I know one developer who is very much into greenfield development. He indicated that when Melbourne 2030 came out they looked very closely at the viability of setting up a division to look at infill development. They came to the conclusion that the planning process and the delays and all that made it very hard to do that on a substantial scale, so they headed straight back to greenfield type development. I think they probably reflect where the market is because of cost considerations and the like. It does have longer term implications in terms of transport. The other issue which we are focusing on very heavily is trying to create local jobs. But large cities have a central focus, and that remains the case.

Senator WEBBER—Along similar lines, my office is based up near the city of Wanneroo, which is another very fast growing outer urban area. It is true to say that there has been some discussion about perhaps looking for federal government support for large public transport infrastructure expenditure. I am very proudly Western Australian; we are developing our train line and doing all sorts of things. It is true to say that one of the reasons that public transport or

the train network works there is that the infrastructure is also the rolling stock and it has been constantly upgraded. It was electrified in the late eighties, and new rolling stock has come on since then. That is one of the efficiencies; it is not just a matter of running more trains. If you have trains that are guaranteed to work because they are not 40 years old and graffitied and awful then you are going to have a greater capacity. I do not think the state governments can get completely off the hook in that way.

In terms of some of the discussion about increasing the density in inner-city living, one of the challenges that we have had in Perth, where there has not been the take-up of apartment style living, is that the inner city is where a lot of the other social infrastructure that we need has been closed down. When I first moved into Perth there were two supermarkets. They both closed; we have only just got one back. That is where all the schools closed and all of that stuff. Perhaps people move to the other suburbs because that is where they are guaranteed to have a supermarket and a school; they are prepared to spend a fair bit of time commuting. I would appreciate your comments on those issues.

Also, as councils look at the release of land in the outer city, what kind of initial discussion is there about the provision of transport infrastructure? As I said, I know that our state government has a plan, and they work with local government bodies. But I get the impression from Sydney that they just let it develop and then they think about providing some major infrastructure sometime down the track. And usually it is then a public-private partnership which does not work too well. Are there any of those initial discussions like we have in Perth?

Also, I notice that the Western Transport Alliance, at the end of its submission, talks about the long lead time between identifying a problem and then developing options, obtaining Treasury funding and fixing it. If we started to make some of the changes that you recommend in this submission, how long would the lead time be until we actually saw the positives? How long would we have to wait for those?

Mr Robins—There are a few issues in those questions, Senator. Going to the first one—and this is only a personal opinion—Melbourne has had something of an aversion to higher density living for a long time. People have visions as to what it means which I think are pretty inappropriate. They see it as lower quality living, whereas in fact one would argue that it actually suits people's lifestyles at different ages and does make sense. But there is still this love of the large block and the like.

There are also cost issues. A sizeable block anywhere within five to 10 kilometres of central Melbourne is a very expensive commodity, whereas a block in the outer suburbs is within reason—and, in the case of the Wyndhams and Meltons, off peak you are only half an hour from central Melbourne—so people still see cost as being something to cope with. Your comment about infrastructure being closed down in central Melbourne is true. Schools and the like do close, but I do not know how much of an issue that is in terms of people's decision making. I think it is more about what they can buy, what they pay and those sorts of equations.

I refer to your question about transport planning. One of the issues that we do not handle well in Victoria is an acceptance of the responsibility for different parts of the transport network—and I am talking about the road network. When a large-scale development turns up, we cannot sit down and say, 'This will be a state responsibility and that will be a local government

responsibility.' We are running development contribution schemes and making assumptions. We have taken this issue up with the state government. It has been recognised, and there are some changes afoot, but that has been a real clumsiness in our system and we should have been doing a lot better.

One of the issues that we are putting forward at the moment is the need to preserve corridors for rail extensions at some future time. We have suggested a two-stage approach to development contributions to handle that, one being that, when land is rezoned from rural to residential, there is a very sizable capital gain there and we think that at that stage the land for a future transport reservation, whether it is a major road or rail one, ought to be provided immediately so that it is actually set aside and quarantined for the government.

That would still require a second stage of development contribution for funding for that infrastructure. Whether that is full funded by development contribution—and I think Sydney may be heading in that direction—or partially funded, with the state or somebody else paying, is really a matter for some debate. But it is about tackling the issue in advance, rather than doing what we do at the moment: sitting there, foreseeing a problem and thinking that somebody else had better figure this out one day because at the moment we have not got the answers. We have been raising these issues. The state government have set up a growth area authority which will focus very much on the six municipalities. We are optimistic that that will improve debate and consideration, but there is still a long way to go.

As for problems with development contributions, invariably there are long lead time issues; they are not short-term ones. The time lags we are talking about could, typically, easily be eight to 15 years. That is much slower than one would want, but they could easily be of that sort of duration.

Mr Loveridge—We have just commented on the new clause 56, which has been put into the Victorian planning provisions, which talks about public transport infrastructure at new developments over a certain lot size. State government is addressing that issue with planning—and the business of suburbs being built where there is no infrastructure for public transport. So that is being addressed with this new clause. On your comment about high-rise buildings, not two weeks ago there was an article in the *Age* about the Docklands development and the lack of infrastructure—one hairdresser, one milk bar, no supermarkets—and the state government is being asked: what are you doing about this lack of infrastructure? How are you going to get people to live there if you are not going to supply basic infrastructure like a hairdresser? So, yes, that is being discussed as we speak.

Mr Cottrell—I have a couple of quick comments. In terms of the plans for the transport infrastructure, I think the last time Melbourne had any major vision was with the 1969 Melbourne transport plan. It was way out—a massive network of roads, freeways, rail and tramlines et cetera. It all got pruned back, and ever since then no state government has ever gone in that sort of direction, mainly because it was a huge vision which was based upon projections of population et cetera and the estimates were wrong. The travel demands just did not result and the infrastructure was not required. Ever since then no state government has ever put out a vision. It is always, 'It's not in the budget for next year.' The budgets are worked out from year to year, so there is no ability to say, 'In 10 years time we need X and we will start providing for it'.

In response to your lead-time question, if you think about it, many of our studies take 12 to 18 months. There was an inner west municipality study, which was started in 2001, I think, or at least 2002—it is now 2006—and it has never been released. That was just a conceptual thing. If you work on, say, 18 months for a study concept and investigation, you then have to have consultation with the public, which takes another 12 months, and then there is the concept development and design work, which is at least another 12 months again. So, before any project gets up, you have a minimum of three years, possibly four, which is a term of government—funny about that!

Senator STERLE—I want to talk about public transport infrastructure. We have seen a number of submissions from the large councils around Australia. I have to agree with Senator Webber's statement about the rail system in WA. But there is another thing I want to bring to your attention: I do not know whether it is different, whether there is something in the water over in Perth that is not here, but we have a wonderful train system to the northern suburbs—and let me make it clear: I live in the southern suburbs, in the real part of Perth, down Fremantle way—

Senator WEBBER—You are getting yours.

Senator STERLE—We are getting one as well. But it amazes me that we have these wonderful state-of-the-art train stations—trains just zip, zip, zip, zip, non-stop all the time, flying past every five or 10 minutes in peak hour—and yet we cannot break the habit of having a single person in a vehicle, bumper to bumper, and the madness starts at about four o'clock in the afternoon and goes through until seven at night. If we are doing something different over there, how can we better it? Councils talk about trains and stations, big parking bays at stations, having shops at stations and all that, but do you honestly believe that Victorians will use public transport?

Mr Robins—The very strong indicators we have at this stage are that the number of people using public transport is increasing and the number of people who will use public transport will increase. The psyche at the moment is still very much towards the car, and no doubt that will remain a very significant, and probably the dominant, movement. The 20 per cent by 2020 would suggest that the other 80 per cent will be by car, by bicycle or on foot, so one would think that the car is still a big part of it. But public transport is increasing in popularity, partially because of fuel and partially because of the cost of parking in central Melbourne. It is not cheap to park in central Melbourne so, if they can do it, people will use public transport.

Another area of challenge that we have is connections to the rail stations, whether they be a bus connection or somewhere to park at the station—and, of course, those things add to the time of the whole exercise. Within our city, one of the issues that we want the state to think about and review is the policy whereby they are trying to have everybody living within 400 metres of a bus service. The bus service is currently at 40-minute intervals, and buses wend their way in and out of residential areas. Fundamentally, we think that, in morning peak hour, we need to actually change that to a 600-metre walk but with buses at greater frequency so you get to the train station a lot more quickly.

Senator STERLE—It is a long time in between, isn't it?

Mr Robins—Yes. It is really about the travel times that influence people.

Senator STERLE—Is the increase in public transport on a par with the increase in vehicles on the road or is it substantially leapfrogging the use of private vehicles?

Mr Robins—We would need to research that, but my feeling would be that public transport has grown more quickly than road transport in recent years. The difficulty we have, though, is that the capacity in the system is quite limited into central Melbourne.

CHAIR—Thank you very much. I think we could keep going for quite a while, but we are out of time.

Mr Robins—We did prepare five DVDs, which is not enough, but they contain some of that information.

CHAIR—That is very much appreciated. The secretariat will take those and make sure we all get copies.

Mr Robins—Thank you for your time.

[3.47 pm]

LONG, Mr Timothy, Committee Member, Public Transport Users Association

TAMPION, Mr Cameron, Public Transport Users Association

SALES, Ms Louise Jane, Transport Campaigner, Environment Victoria

CHAIR—Welcome. Some of you have heard my spiel before. You are covered by parliamentary privilege when presenting evidence to the committee. As it is a public hearing, it is unlawful for anyone to threaten or disadvantage a witness on account of evidence given to a committee and it may be treated as contempt by the Senate if anyone does so. It is also a contempt to give false or misleading evidence to a committee. These are public proceedings, but we may agree to a request to hear evidence in camera or we may determine that certain evidence should be held in camera. If you object to answering a question, you should state the ground on which you object to answering the question and the committee will decide whether we want to insist on you answering the question. If we do insist on you answering, you are entitled to request for that evidence to be given in camera. I invite both organisations, if you feel like it, to make an opening statement and then we will move to questions. Do you have any comments to make on the capacity in which you appear?

Mr Tampion—I am one of the authors of the joint submission that the PTUA and Environment Victoria have submitted to the inquiry.

CHAIR—Go ahead.

Mr Tampion—Thank you, Chair, and thank you to all senators here today. Thanks for the invitation to appear and welcome to Melbourne. I do not actually have a lot to add in terms of what we have already said in our submission as far as the projections for oil production are concerned. Perhaps the only observation I would make in that regard is to do with the release of BP's most recent Statistical Review of World Energy. That review, as you heard today, paints a relatively rosy picture of the supply situation by accepting official data from the world's oil producers. Full marks go to BP for trying to validate that data with other companies and third parties and so on. But they are really up against it when you consider that a lot of those companies are actually state owned companies in places like Saudi Arabia and so on, and their data is hardly going to be any more reliable than the official data from the country itself.

Taking Kuwait as an example, we note that they are still shown as having about 100 billion barrels of oil in reserve, when insiders, as we say in our submission, are suggesting it is possibly only half that amount. Production figures for a range of other key producers are also looking a bit wobbly, and my colleague Mr Long could probably elaborate on some of those. When BP's review was released, the head of Total in France actually suggested that the peak was probably more likely to be in 2020 rather than in the much more distant year that BP's report would have you believe.

Our submission did not go into a great deal of detail on new sources of energy, oil and alternative transport fuels. Suffice to say that what is on the table does appear to be wholly unsatisfactory and actually inadequate as a replacement for oil on the scale that we are currently using it. In assessing any of those alternatives, it is quite important to use a complete life cycle analysis that looks at energy consumption, environmental damage, carbon emissions and so on during the whole cycle, including extraction, production, distribution and then, finally, combustion in the vehicle itself.

We also need to look at the opportunity costs. For example, at the moment world food stocks are actually at a 30-year low, and climate change looks set to make farming an even more marginal activity than it is by disrupting rainfall patterns, making natural disasters more frequent and more severe—such as those we saw in Queensland that took their toll on the sugar and banana crops. If we are actually looking to get other countries to lower the protection of their farmers and open their markets to our exports, then we are not going to be sending encouraging signals to those potential markets if we are going to turn around and say: 'Sorry, you can't have any wheat this year. We've decided to make ethanol for our SUVs instead.' So there is a note of caution.

Also, we should not make the mistake of thinking that there is plenty of crop waste available for making biofuels from cellulose. There are good reasons why farmers are not burning their crop stubble these days. These residues contain important nutrients and they are quite important to minimising soil erosion. Australian soils are actually poor enough and already overly reliant on petrochemical fertilisers without stripping away additional fertility just to feed our oil addiction.

As we say in our submission, there may be a small role for biofuels in the Australian energy mix, especially in the regional areas where a lot of them are going to be produced. Therefore, the fuels would not actually need to be transported up and down the country, as seems to be happening at the moment. But we also need to be aware of the possible harm that we may do to biodiversity and other users of the biofuel product, such as the livestock industry. That industry may be hurt by rising demand for—and therefore rising prices of—the materials that are feeding the biofuels. We also need to be wary of non-conventional fuels that might be eight times more carbon intensive than conventional oil. Climate change is already deeply serious enough without finding more ways to turn brown coal into CO_2.

I am not sure if the committee has had a satisfactory response to item (c) of its terms of reference, about the social and economic impacts. We certainly have not done detailed econometric modelling, but it does seem that the impacts could be significant. Take for example the 27,000 million litres of fuel that are consumed in Australia each year and look at the employment multipliers in table 3.1 on page 11 of our submission. That table tends to suggest—doing a back of the envelope calculation—that each 1c price rise could strip 3,000 to 4,000 jobs out of Australia. My simple arithmetic says that a 10c rise would see 30,000 to 40,000 Australians lose their jobs. Similarly, on that basis a dollar increase would see unemployment close to doubling. But I do not think that relationship between expenditure and jobs would necessarily hold together once you started to see movements of that magnitude. I think the impact would actually be much more severe. Obviously, that assumes that fuel is available at a cost and that we are not actually suffering from physical shortages. That also assumes that Australian motorists have no choice other than to pay higher prices for fuel and, as a

consequence, end up spending less on other goods and services. Table 3.1 tends to imply that if motorists are able to shift to public transport the employment effects could actually be positive—but that is a big 'if'.

Referring to some of the issues that were raised by the previous witnesses, if we look at the surveys of why people do not take public transport we invariably find it is because services are not in place, too slow or too poorly integrated. Again, the paper listed at footnote 32 on page 14 of our submission outlines our views on how those sorts of problems could be resolved—in Melbourne, at least. The reality is that we are probably going to need the commitment of all tiers of government to achieve that. That is not to say that all car journeys must be shifted to public transport; it would obviously be impractical to undertake some journeys on public transport. But it is important to note that the vast majority of car driving takes place in urban areas and it is often reported that more that half of those journeys are of less than five kilometres. These journeys would be amenable to being shifted to walking and cycling, provided the urban environment is sufficiently accommodating, with safe bike paths and so on.

Of the remaining journeys, a lot of them are potentially frivolous. People might drive across Melbourne to save five dollars on an item they could have bought around the corner. A lot of those trips could be shortened or avoided altogether. This still leaves a range of journeys of more than five kilometres. I would guesstimate that shifting those journeys to public transport would double or triple the current number of public transport journeys. That is a big ask if your public transport system is dysfunctional, but it is not an unusual level of patronage in cities that have got their public transport act together.

There are a range of actions the Commonwealth could take to facilitate that, including not funding new and enlarged roadways that encourage urban sprawl and additional driving. The Commonwealth could fund public transport infrastructure, particularly high-capacity, energy-efficient rail services, given that suburban trains and trams do not really care where there energy comes from: they can use electricity from coal, wind, wave, solar, biomass or whatever. But the motor vehicle fleet cares a great deal about its energy source. In fact, it cannot easily swap fuels. This was demonstrated when it took around 20 years to roll out unleaded fuels—and that was a mandatory change. Production and distribution infrastructure also needs to be put in place. The federal government could also boost its commitment to rail freight to ensure that supply chains are efficient and affordable, in view of rising fuel prices. It could also fund facilities for walking and cycling. To some extent it already does that, but it could certainly boost that.

On the tax policy side of things, the federal government could reform fringe benefits tax so that it does not encourage additional driving. That is another statutory method that would at least give public transport an equal deal. Also, the federal government should not succumb to the temptation to lower the fuel excise. The paper listed at footnote 33 on page 15 of our paper adequately describes why that would be a self-defeating strategy to follow. That is all I have to say at this stage.

CHAIR—Mr Long and Ms Sales, do you want to say anything?

Mr Long—With regard to Kuwait, I think the inside information was that their reserves were half those stated, and it is about the same for Saudi Arabia. Regarding biofuels, I have a copy of an interesting paper that measured the amount of green plant matter that has gone into the

evolution and construction of our oil and fossil fuel reserves. It says it takes 98 tonnes of green matter to produce one gallon of petrol and that, in gross numbers for fossil fuel consumption, about 400 years worth of total world production from all green plants goes into one year's supply of fossil fuels. So biofuels are very good niche players for specific purposes, but they will never be a replacement for petrol, coal and gas.

Ms Sales—I do not have much to add. One thing that Environment Victoria is deeply concerned about is the whole idea of coal liquefaction as a solution—producing petrol from coal. The ACF commissioned a study into what that would mean in terms of greenhouse gas emissions. It could mean eight times our current greenhouse gas emissions. Industry is putting forward carbon sequestration as a potential solution, but that technology is still in development and it is far from proven.

I think we should be looking at energy efficiency and more efficient ways of getting around. Cameron Tampion mentioned investing in energy efficient public transport, especially heavy rail in urban areas. Obviously biodiesel will still have a role to play in country areas, where public transport is not a solution to transport needs. But, for urban areas, we should be focusing on heavy rail as a way of getting around and on integrating bus services with rail.

Senator WEBBER—I think you've upset the truck driver!

Senator STERLE—Thanks for your submission. There is a lot I agree on. I love to walk and I wish there were more walkways around the cities, because we have beautiful cities. But I sat in the same room as Peter Newman once and heard him tell about 200 people in Fremantle what a wonderful feeling he got when he looked out of his house in Fremantle and saw a train go by because that meant there were 80 trucks that were not on the road. I responded: 'Fine. If you want to buy your toilet paper and toothpaste at the local railway station, that is not a problem; us truckies will get it there.' But isn't it very simplistic to suggest that the majority of our transport in suburban Australia should be on heavy rail? It is a wonderful statement but—

Ms Sales—Heavy rail combined with feeder bus services to meet the heavy rail. We need an integrated transport system.

Senator STERLE—For public transport? You are not talking about freight transport?

Ms Sales—No, I was talking solely about public transport.

Senator STERLE—I am sorry; I thought I heard 'freight'.

Ms Sales—I think we should definitely be getting freight onto rail for longer trips. It is much more efficient than using trucks.

Mr Tampion—I take your point, and it is a very valid one. I think there is certainly strong potential for the likes of inland ports as a way of getting freight closer to its point of destination or onto rail at an earlier stage in the supply chain. That, of course, does not mean that it gets all way, for example, from the farm gate to the supermarket or wherever. There is clearly going to be a role for road freight as well. That is why we need to make sure that what liquid fuel is available is prioritised for those higher value journeys or tasks for which rail is not a suitable

alternative. Part of that is making sure that where rail does make sense, you make sure that it is a viable alternative to make sure that liquid fuels and road freight are able to fill in the gaps.

Senator STERLE—Don't get me wrong: rail is very good at what it does in terms of bulk commodities over long distances. But it is very simplistic to think that a container can hit, say, the port of Melbourne and then be put on a train to get it closer to Fountain Gate shopping centre or somewhere like that. It is just not a reality. I am not speaking down to you, but I encourage you to spend some time at the major shopping centres and watch the amount of freight moving out on the back of trucks all through the night. It is just not conceivable that trains could supplement the task force we have in our urban centres.

Mr Tampion—Yes. I am sorry if I have given the impression that we think the vast majority of freight, certainly in urban areas, can be shifted to rail. That was certainly not the intention. It is simply that there is a much larger role available for it.

Senator STERLE—I probably disagree on that too, but I will shut up and let Senator Milne ask some questions, because she has to go.

Senator MILNE—What is your view on a congestion tax? We have talked about the need to invest in public transport. Clearly, it is problematic. Huge amounts of money are needed and, if you are going to get people onto public transport, the infrastructure has to be there to support them when they make the switch. London, Singapore and a whole range of other cities have gone with congestion taxes. They were hugely unpopular to start with and then they were accepted and have made a big difference. What are your organisations' views about a congestion tax to assist the transition?

Mr Tampion—I have been pleasantly surprised that congestion has come up both in our discussions and in those with the previous witnesses. I have a copy of our response to the state government's Competition and Efficiency Commission draft report on transport congestion. I am quite happy to leave a copy of that with you. Unfortunately, I only have the one.

Senator MILNE—It is good if it can come to the committee and then we can all get it.

Mr Tampion—In it we address the issue of road pricing. I suppose it may have some role, but the key issue there is to make sure that you do not overly burden people, especially those in outer areas, who are already suffering quite a lot from the rising price of fuel. If you then go and whack congestion charging on top of that without making sure that there is an adequate public transport network that they can choose to use instead, there are very serious equity implications. That is broadly our position on that.

Senator NASH—I must say that I agree with Senator Sterle that it is impractical. I want to address the issue of public transport in general. How do we get a public transport system in urban areas to such a standard that people want to use it? I know if I am in a city and I want to get to a place, I do not want to go on public transport because I want to get from point A to point B and I want to end there. How do we change that mind-set of people, including people like me, so that they to want to use public transport and how do we get it to the level it needs to be at to encourage people to get on it?

Mr Tampion—That is a very fair question, Senator. You are not alone in wanting to get from A to B as effectively and quickly as possible. That is where public transport is falling down. What we address, in some degree of detail, in this congestion report response is the reasons why people are not using it at the moment. We look at it in the context of the traditional marketing mix: product, place, price and promotion. We concede that there are a number of areas where public transport is currently falling down. We address things like the product itself. As you heard from a previous witness, frequency of service is not there at the moment. If people know they will have to wait 40 minutes then they will not do it; they will hop in the car. Similarly, if the product is not there in the first place—the distribution and the placement of it—as we see in Melbourne, where two-thirds of the city do not have decent access to the rail network, then they will not use it.

If the price is not competitive, they will not use it. We did a bit of a comparison of public transport fares and the cost of motoring in Melbourne over the last 30 years. Public transport does not stack up well because the cost of it has been rising much faster than the cost of motoring over the last decade and a half. Finally, we looked at promotion. You need a system that people understand, that is user friendly and that is legible—to use the terminology that is used in public transport—so that both frequent and infrequent users, including people from out of town, can get to the station, the bus stop or the tram stop, know what to do, how to do it and how they can get to where they want to go quickly and easily. Unfortunately, at the moment public transport is not doing those things, which is why its patronage share is so low.

Senator NASH—Whose fault is it that it is not doing those things?

Mr Tampion—It is always easy to blame government, I suppose.

Senator NASH—Which ones? Could you use Melbourne as an example?

Mr Tampion—In the case of Melbourne, one of the key deficiencies we see is a lack of integration and coordination. We have had this experiment with a particular brand of privatisation, where the trains have gone off and done their thing, the trams have gone off and done their thing, and the buses—who knows what they are doing. There is no-one bringing it all together in a coherent way. Other cities around the world are doing that; they are bringing it together in a coherent way. They are integrating it. They are getting good common service standards. They are getting the marketing so that it all works together as a seamless system. They are getting it all harmonised, so you get off the bus and pretty much straight onto a train rather than getting off the bus and having a 40-minute wait. We see a very strong role for those sorts of bodies in Melbourne. Perth have something broadly like that—they have TransLink.

CHAIR—After hours where I live it is very difficult to get a connecting bus from the train. The train system is perfect. You get off and, if you are after hours, you have to wait up to an hour. My son frequently has to do that because he is so uncoordinated he does not catch the train in time.

Mr Tampion—A lot of it is institutional—getting the right sort of institution in place to get it working together. Some of it, however, is infrastructure. As mentioned before, two-thirds of Melbourne does not have access to the rail network, and that is clearly unsatisfactory. There are lines that need to be extended and new lines that need to be put in to fill the gaps to make sure

that everywhere in Melbourne has access to a high-capacity, high-speed service that is attractive to use. Unfortunately, a lot of Melbourne does not have that at the moment and we are seeing that in rising levels of congestion and rising frustration with climbing oil prices and so on.

Senator NASH—Senator Webber made that point before about being attractive to use and having the rolling stock to such a standard that people wanted to use it. It is not just the capacity to get from A to B on public transport; it is the environment in which you are getting from A to B.

Mr Tampion—Absolutely.

Senator WEBBER—I think it is more that it works all the time—it does not break down.

Mr Tampion—Yes. Reliability is important for customer perceptions, certainly.

Senator O'BRIEN—Yet the utilisation of public transport in Sydney and Melbourne is rising because of the cost of alternative private transport.

Mr Tampion—In gross numbers all transport seems to be rising, and that is not just public transport. According to the latest state government budget papers, road traffic seems to be climbing even faster, which implies that public transport is actually losing the modal share in Melbourne.

Ms Sales—In the last year public transport has risen by two per cent, whereas road transport has risen by 3.5 per cent, so you can see—

Senator O'BRIEN—Where are those figures available?

Mr Tampion—In the state government's budget papers. The exact location I could not tell you off the top of my head but I am certainly more than happy to find those details and forward them to the committee.

Senator STERLE—Is that CBD?

Mr Tampion—It is Melbourne as in Greater Melbourne.

Senator O'BRIEN—The other issue is the basic cost of infrastructure and recovering the cost. How would you suggest governments deal with the basic cost of putting in new links and tailoring the additional passengers into a system that is already struggling to cope with the number of passengers that they have?

Ms Sales—The state government could certainly divert money that is currently being spent on roads. For example, the state government is spending $1 billion on widening the Monash and Westgate freeway, and we believe that money would be much better spent on increasing rail capacity.

Senator NASH—Is the government, though, not responding to demand in doing that? It could be said that it might be better to do it the other way, but are they not widening that road because that is what the public is wanting them to do?

Mr Tampion—I think that is a reflection of the fact that the alternative is inadequate, that people are jumping into their cars. I think that it is also important to note that increasing road capacity effectively generates additional demand. It is a self-perpetuating problem. You build the capacity and you get more traffic. It is self-defeating but self-perpetuating. I suppose it comes down to making sure that there is an attractive alternative there. What you tend to find—and we mention it in our submission on the congestion inquiry—is that congestion costs are lower in cities with large rail systems and where the public transport is fast and efficient. If people know that public transport is going to be quicker than driving, then they will use it instead. So there tends to be a bit of convergence there between the speeds that you can achieve by driving and the speed that you get by taking public transport. The faster your public transport is, the more likely you are to switch to that and therefore reduce the level of traffic on the roads that tends to build up and slow everyone else down.

Ms Sales—The time frame that we are looking at for peak oil hitting is in the next 10 years. The majority of experts seem to be settling around 10 years out from now. So now is the time to be investing in robust rail infrastructure, and I think that for governments to be expanding freeways is really short-sighted.

Mr Long—All Australia's major cities have public transport rail systems. Melbourne and Sydney—

Senator O'BRIEN—Hobart does not. Darwin does not.

Mr Long—Hobart used to.

Senator O'BRIEN—It has got a rail track, yes.

Mr Long—Melbourne and Sydney, per head of population, had the most intensive passenger rail systems in the world in the 1940s and 1950s, and Melbourne especially is regarded as one of the first suburban city because it developed a very large passenger rail system just before the turn of the century. Both Melbourne and Sydney at least have a lot of infrastructure built around that rail infrastructure, so it is conceivable that if we improve our bus transfer rates from bus to rail we could make the infrastructure a lot more productive. In Melbourne the percentage of transference from bus to train is 10 per cent at the moment, I think.

Mr Tampion—It is certainly low—that is a conceivable figure.

Mr Long—Whereas in a comparable low-density North American city, for example, Toronto, something like 70 or 80 per cent of all passengers on rail come via bus. This goes to demonstrate how a lot of work can be done without a huge amount of infrastructure expenditure.

Senator O'BRIEN—In terms of the cost of expanding the rail network, have you done any work on the expenditure that is required on the corridors that are available and the overall cost of the necessary investment?

Mr Tampion—I do not have the figures to hand. They tend to compare favourably to freeways—put it that way. Another point that should be made is that, if you have a well-functioning public transport system that is attractive to users, especially to choice passengers or 'discretionary' passengers, as they tend to be called, that pay the full fares, you tend to pay lower subsidies than if you have what you could call a 'charity' service that only people who do not have a choice and who are on concession fares have to pay. So to some extent it is self-reinforcing. If you have a good system, you get better patronage and certainly better patronage among full-fare passengers. Unfortunately, at the moment Melbourne's cost recovery level is low compared to a range of other cities around the world that have much better public transport systems that are also better managed. So the cost could in some ways be reduced for running the system if it were a better system.

Ms Sales—There was a recent VTPI study which looked at American cities which had expanded their rail networks compared to ones that just expanded their bus networks and they found that cities that had expanded their rail networks recovered more in the way of costs, the patronage was higher and—what was the other finding?

Mr Tampion—There was higher patronage, lower operating costs and higher discretionary ridership and so on.

Ms Sales—So they basically fared better.

Senator O'BRIEN—You have got some work that you can supply to us on that area?

Mr Tampion—Some of that is in here—

Senator O'BRIEN—You can take that question on notice—

Ms Sales—I can give you the VTPI paper, Senator.

Senator O'BRIEN—That is fine, but if you have got the material that gives us an indication of what you think needs to be spent on the rail system, for example, in Melbourne, counterbalancing the expenditure on roads and where you say the money could be better spent, I would appreciate that.

Ms Sales—Another potential source of funding for rail infrastructure is federal funding. Currently the federal government contributes to road building programs but not to public transport.

Senator O'BRIEN—Non-urban roads, basically.

Ms Sales—I think it contributes to rail for freight but not for public transport.

Senator WEBBER—I want to follow up along the lines of what Senator O'Brien was talking about. I am based in the northern suburbs of Perth and we have got this train line that we are very proud of—and that Senator Sterle is very jealous of! When that was being put through, in recognition of the ever-expanding suburban corridor that we have in our major cities the state government did also extend and widen the freeway. I would love to have more people on the

train but there are actually lots of people driving cars. Sometimes it is not an either/or; sometimes it is a combination of both to allow people to move around.

Ms Sales—If you look at comparative expenditure in Melbourne over the last 10 years, though, we have had 30 times more spent on road infrastructure than on public transport infrastructure, so we have got some ground to make up in terms of public transport infrastructure spending.

CHAIR—It is often seen as a brave investment. The state government is copping it in the neck over our southern extension, whereas they do not cop it in the neck over investment in roads.

Mr Tampion—And I suppose, to bring it back more closely to the terms of reference of this inquiry, maybe at the moment there might be that demand for the road space but in 10 years time, when we think peak oil is likely to be hitting, that would be a very big, expensive white elephant because fuel might be too expensive or not available. So it is a big risk to pour lots of money into roads on that scale.

One other small observation I would make is that there is a strong relationship between transport and land use planning. Transport is really a derived demand, and the better you can integrate that with your land use planning the more reduced requirement there is for travel and lengths of journeys. That is a key point that we would want to make, and it was also mentioned by an earlier witness. Although it is largely a state and/or local responsibility, as you drive out to the airport I want you to just look at the discount or factory outlets at Essendon airport on Commonwealth land that are pretty much inaccessible by anything other than car or aeroplane. There is a role there for the Commonwealth government to also make sure that it lives up to the aspirations of integrating land use and transport planning.

Ms Sales—Also related to that point on land use planning, there is something else worth bearing in mind. On rail you can move 20 times the number of people that you can on the same area of road. You need a freeway 20 times as wide as the railway to move the same volume of people, so that has obviously got economic impacts for cities as well.

Senator O'BRIEN—Make sure the road corridors become rail corridors.

Senator STERLE—Wide rail corridors!

Mr Tampion—We are very jealous of what is happening in Western Australia. We are wondering whether we could import Alannah MacTiernan for a while. Would you have any objections to that?

CHAIR—You don't have to comment on that one! There are a number of papers that you said you would get to us; if you could do that, it would be appreciated because the information will be very useful for us. Thank you very much.

Committee adjourned at 4.24 pm