COMMONWEALTH OF AUSTRALIA

Official Committee Hansard

HOUSE OF REPRESENTATIVES

STANDING COMMITTEE ON PRIMARY INDUSTRIES AND RESOURCES

Reference: Assisting Australian farmers to adapt to climate change

THURSDAY, 3 SEPTEMBER 2009

MELBOURNE

BY AUTHORITY OF THE HOUSE OF REPRESENTATIVES

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[3.29 pm]

WHITE, Dr John Douglas, Executive, Ignite Energy Resources Pty Ltd

CHAIR—Welcome. Do you have any comments to make on the capacity in which you appear?

Dr White—Ignite Energy Resources Pty Ltd is a privately owned Australian company.

CHAIR—Thank you. Although the committee does not require you to give evidence under oath, I should advise you that this hearing is a formal proceeding of the parliament and warrants the same respect as proceedings of the House. The giving of false or misleading evidence is a serious matter and may be regarded as a contempt of the parliament. The committee has received a submission from Ignite Energy Resources Pty Ltd, which has been marked as No. 60. Perhaps you would like to make a brief statement to that submission, after which the committee will probably have questions to ask of you.

Dr White—Thank you. I will take the submission as read, if I may, and will hand you an additional submission today; I have extra copies here. I will spend four minutes on this; I promise not to go on for too long.

In the first part of this additional submission, I describe a proposal to the Australian government and all other levels of government to establish a number of biological carbon capture and storage demonstration projects. These projects would sit beside the Australian government's commitment to have demonstration geological carbon capture and storage projects to manage Australia's greenhouse gas emission liability over the next decades. The biological CCS projects are based on using our rural landscape with modern technology and systems as well as re-education in order to convert agriculture from being a destroyer of soil carbon, natural soil fertility and biological activity, and drought and salinity resistance into a sequesterer of carbon by virtue of the natural accelerated photosynthesis action of the crops, the grasses, the plants, the vines and the trees. This is recognised worldwide as being important.

The CSIRO in several papers, three of which I attach to that two-page recommendation, now say that it is possible—as did Garnaut in his report—to sequester enough CO2 naturally to meet our obligations by 2020 and even out to 2050. This is not a permanent solution, in that eventually our soils would be resaturated to where they were before European settlement and harsh industrial and aggressive chemical farming. But the CSIRO, in an August report to the Premier of Queensland, has said that Queensland could achieve a 77 per cent offsetting of its total fossil fuel emissions by changing rural land use, which would improve rural land use productivity and environmental aspects.

I have then given a set of recommendations that the government could follow to implement this. I have given two or three papers that describe the science and the practice across a broad range of cropping, fertilising and grazing activities. I then give you a paper where the UN FAO has said that, without rebuilding of soil carbon, the world will face food security issues over the

next 30 years, as population grows from six billion to nine billion and has implored governments to bring soil carbon into the post-Kyoto round for acknowledgement at Copenhagen.

I have given you a very interesting paper by the TVA, the Tennessee Valley Authority, who really invented the modern chemical synthetic fertiliser system. They say that system, after 40 or 50 years of intensive use, has had its day and that they now need to introduce a new low-energy, low-emission and microbiology based replacement fertiliser because the soils have been so degraded of carbon and biology by the existing synthetic chemical/pesticide regimes. There is a press release by the National Farmers Federation finally agreeing that they want farmers to be able to opt in to soil carbon trading, because it is real and it will save farming in Australia.

Lastly, I will give you a quick presentation from Ignite Energy Resources about how, fortuitously, we have in Gippsland the world's best supply of high humic-fulvic acid coal in the world, from which you can manufacture highly beneficial high-performance biologic fertiliser to replace chemical fertilisers at a lower cost and with better results. So there is a product solution—amongst others. We are not the only one; there are many suppliers from many other sources. This document just summarises, I think, a magnificent opportunity for Australia to use nature's technology to re-sequester CO2, which we have emitted from farm soils and fossil fuels over the last couple of generations.

CHAIR—I take it that your submission would reinforce microbes and fungi being put back into the soils that have been depleted and taken from by a lot of hot fertiliser.

Dr White—Traditional farming in a range of ways has killed most biology in most soils. You do not find an earth worm in many farm paddocks any more; you do not find the fungi and bacteria mix that you need for healthy plant, grass, crop and tree growth. The main point of this fertilisation system and other biological farming systems is to use modern technology and better products to rebuild that biology and carbon mix to get healthy, fertile soils and plant growth—and the worms reappear within a year or so.

CHAIR—One paper from the CSIRO that I have read, which now is a year or so old, said that we needed to do perhaps a series of several farms in different districts of Australia to reinforce some of the science. Your submission is a bit bolder than that and says that we do not need to do that now. You say that the CSIRO has put a paper—which sounds familiar—to the Queensland government.

Dr White—They issued a paper in August this year. It is a national research flagship project and is an analysis of greenhouse gas mitigation and carbon biosequestration opportunities from rural land use. It was commissioned by the Queensland government and really goes across the whole range of biosequestration—not just fertilisation, but rangeland grazing and trees. It says, remarkably, that Queensland could attain 77 per cent of the state's emissions sequestered in soils and vegetation by introducing this philosophy.

My confidence is based on the fact that a company we are in joint venture with, which is LawrieCo, based out of Adelaide, has been developing and building this biological farming system over 15 to 20 years. Its founder and managing director is a fifth-generation wheat farmer, so he knows. He now has three factories that are manufacturing a range of biological carbon based fertiliser products—liquid powder and high compressive strength granules—to be used in

the same farm machinery that they use for spraying and MAP and DAP. He is now fertilising over 300 farms, spreading from the WA wheat belt right across South Australia, his home state, now into western and south-western Victoria and heading to Gippsland. He is fertilising regularly every year over 300,000 hectares. This is not R&D. This is not speculative. The soil carbon and biology increase and crop yield—the productivity and profitability—on these farms are measured, proven and known. It is spreading across the farm fence because farmers look over and see their neighbour doing better at less cost, regrowing biology and worms. So we say, by all means, that CSIRO, because it has not watched this space for 10 or 12 years, should come out and observe the history of what has happened, do measurements going forward, look at the measured data from the last three, five and seven years and simply validate it. It does not need re-proving from first principles; it is out there on farm scale and is being done and is proven.

Mr PERRETT—That is pretty amazing stuff. Who is the testing group that the irrigation guys talked about? I am sorry; please bear with me for a second.

Dr White—Sure.

Mr PERRETT—So what was that? Western Australia—

Dr White—The farms that they are supplying the biological farming system to: they have just got into the WA wheat belt; they have done it on lots of farms and continue to do so in South Australia; and are now moving into south-west Victoria, even across to Gippsland.

Mr PERRETT—They had a testing group, which I am now looking for.

Dr White—Is this in our submission?

Mr PERRETT—No. Mr Chair, you might go to someone else and come back to me.

CHAIR—Do you have any questions, Sid?

Mr SIDEBOTTOM—No. I just think this is an incredible prospect.

Mr FORREST—Except to say that none of this is new; it is just using what God has given us. It is just about being smart, I think.

CHAIR—Correct.

Dr White—It is a system. It is not just a product and it is not just one company's product. There are many suppliers of this, although at small scale still; they need expanding. It means that you want to keep grass coverage; you do not want bare paddocks. You do not want deep ploughing; you want low tillage. You want seed drilling. You do not want to burn stubble; you want to use folia sprays with biology to digest the stubble and add to the soil and not burn it and kill more. You want to use biological organic based fertilisers. You want to keep grass cover. It is a system, but it does not require technology or knowledge that does not already exist and almost every farmer can convert to it.

CHAIR—I take it that it can be put on through pivots or a liquid process.

Dr White—The liquid can be sprayed through a normal sprayer that most farmers have.

Mr PERRETT—I am sorry; I misled you. It was about testing irrigation stuff. So you would not use this with irrigated paddocks?

Dr White—For sure.

Mr PERRETT—You could?

Dr White—Sure.

Mr PERRETT—This is from the guy from the Cooperative Research Centre for Irrigation Futures; it is in the papers. You have the data there and there are yield graphs?

Dr White—Sure.

Mr PERRETT—And it is selling itself?

Dr White—Farmers are reluctant to change, as we all know. They do what their fathers did and what the DPI extension officer and CSIRO tell them to do.

Mr PERRETT—With respect, Dr White, we have heard that they are very adaptable.

Dr White—But, in general, they will do what they have been taught to do. However, necessity is the mother of invention and then a farmer kicks into his innovation mode. Farmers who have converted have done so because either they were going to lose their farm because they were going bankrupt or their health or their animals' health, they noticed, was deteriorating. They are very adaptable, but people ask, 'Why aren't more changing?' It is because there has been no leadership from all of the authorities to say, 'This works and this is okay.' So you can understand that there is a cultural resistance to change.

CHAIR—Some of the evidence that we have received is that the carbon in soils gets to three per cent and not much better than that and it goes up and down with cropping or whatever. If we are going to take this and use it to measure against world's standards so that we can gauge some positive benefits in a world scheme, what benchmarks do we have to start from to where we are going now?

Dr White—I think the benchmarks are trying to re-understand what soil carbon levels or soil organic-matter levels were pre-European settlement. There are many estimates that they were between 10 per cent and 37 per cent. But I am told that, across the whole 500 million hectares of Australian rangelands, grazing lands, cropping lands and irrigation lands, they were probably, on average, between three and four per cent. They have gone down to about a third of that. So let's say that, on average, over 500 million hectares, it would be around one per cent, with many sub that and many over it. But that, if you work it out, is the equivalent of 150 billion tonnes to 200 billion tonnes of CO2 equivalent that we have lost from our soils as original soil carbon. That is about 300 years worth of our current annual fossil fuel emissions. So the soil carbon loss in mainly the last 50 years, but take it out to 200 years, is many, many times all the emissions that

we have put into the atmosphere by fossil fuel burning. Not all of that soil carbon has gone to CO2 in the atmosphere; it has gone into rivers and it has gone into the sea.

Mr PERRETT—Some has gone into Chinese valleys.

Dr White—Yes. Much of it has gone into the atmosphere, but it has been lost from the soil. So the opportunity is to rebuild back to that original carbon level—and we can look back into old records and estimate that. My estimation is that it would take us a century before the soils across the whole range were saturated or back to pre-European levels. In this August report, CSIRO have said that Queensland could keep doing it for between 40 and 50 years at the rate of sequestering 77 per cent of their current total emissions. I am not going to argue with that either, because that is a fantastic—what I call—'carbon bridge', by which time we will have been able to introduce low-emissions coal and renewable energy or get geological CCS to work; whether geological CCS will ever be economic is an open question. But rebuilding soil carbon is so low risk and so beneficial in so many other ways that we should do it anyhow. Also, we should claim the credit for it, in terms of CO2 sequestered in the soil.

CHAIR—But we need to come back to that measuring stick, don't we? We need to measure.

Dr White—We have to measure the increase. We do not have to compare it with anyone else. As long as there is an increase that is measurable every year, that is sufficient. It has been said—and our minister for climate change has said—that you cannot measure it. The CSIRO came out with a report last month that says they now have a fast, inexpensive and simple method of measuring soil carbon, which is called MRI. I had a meeting with them last Thursday. They say, with authority—and I agree with them—that you can link that to the geosatellite systems that run, which are able to go down to a 250-metre by 250-metre grid, and measure the net photosynthesis product on that 250-metre grid every eight minutes. You can calibrate that from the remote satellite system with this very cheap MRI measurement system that CSIRO—I give the report in here—so it now exists. So measurement is not a problem any more and, with calibration, it is cheap, simple, global and remote.

CHAIR—That was one of the issues that we had.

Dr White—Here is the paper from the CSIRO.

CHAIR—Thank you for that.

Mr FORREST—That is better than burying it down a three-mile hole and trying to hide it, isn't it?

Dr White—It is going to be very low cost. Our farmers are doing it because it is cheaper than current farming systems. They make money, rebuild their soil fertility and have healthy animals and healthy crops. Also, we have healthy farmers—they are not using insecticide and fungicide sprays every second week—and we will have a healthier community. I am getting the Baker Institute and other medical institutes involved because I believe this is an important community health issue. We all have a feeling that the food we are eating is full of chemicals and that pesticides are used on it and we all wonder why we have increased asthmas, allergies and cancers. I think that healthier, cleaner food is a major national and international health issue.

Australian farmers have been put on notice by companies like Tesco that, if they do not wean themselves off the heavy use of chemicals, fungicides and poisons for the pests, some of our food will not be welcome on their shelves in Britain and Europe. We have to remember that the European Union, by law, moved to transition into a dramatic reduction, if not a ban, on the use of all these chemicals in 1990. Their use of chemicals has gone down at the same time that ours have gone up. Clean food is going to be the currency of the future. From that export point of view, we must also make this transition.

CHAIR—That is a trade issue and a marketability issue.

Dr White—You get a premium for non-chemical food.

Mr PERRETT—Could you just talk me through the process again, from the power station to the paddock and everything in between?

Dr White—Yes. First of all, we call this 'biological farming'. It is a range of systems and products; there is no single system or product. It will vary according to the crop, the farm, the farmer and the climate, like all farming does, so that is not an impediment. On rangelands and grazing lands, it is to do with how you graze animals so as not to bare the land and let the grasses grow deep roots; so it is rotational grazing—and Tony Lovell is a great spokesman on that. There is an opportunity to use some of our biological folia sprays by air on grazing lands and rangelands to restimulate and inoculate those degraded soils to get the biology back. On cropping lands, again it is a system that I have described, which is to avoid deep tillage and stubble burning and to use biological fertilisers rather than to have total adherence to such things and the use of chemicals.

Mr PERRETT—That is what I am particularly interested in: how is the fertiliser produced?

Dr White—There are many ways of producing it. There are many feed stocks. Most organic materials can be converted into a biologic fertiliser. Climate friendly fertiliser: Andrew Helps is promoting that he can make it out of chicken and dairy manure. That is done in many parts of the world, particularly Europe. You can turn compost from organic waste in the city, if you get it clean enough, into an organic based fertiliser. LawrieCo and IER—because we own a vast brown coal resource here in Gippsland—take lignite, which is brown coal. Certain patches of the lignite are very young and just past being peat. We all know that peat is a beautiful potting mix and you can buy it in little bags in the supermarkets in England to grow your vegetables in. Much of our brown coal is as good as or better than peat. It is so young; it is pure, clean organic material. There is nothing dirty about brown coal. It is two thirds water. It is low sulphur, low ash and low heavy metals. It is pristine, beautiful organic material. Of course, if you burn wet brown coal, you consume an enormous amount of heat to evaporate the water and you make a lot of CO2.

Mr PERRETT—I understand brown coal.

Dr White—Most people say, 'How can you make a biological clean fertiliser out of dirty brown coal?' So it is very important to understand that Victorian brown coal is very clean and very organic. So we take the patches of lignite that are very high naturally in humic and fulvic acid. Some of it is over 42 per cent. That is some of the highest humic-fulvic content lignite or peat in the world, and that is well known. So it is a natural growth material. If you just spread

that type of brown coal on your garden, golf links or wheat crop, it works. But you tend to have to spread quite a bit to get it to work well.

Mr PERRETT—Just as an aside, do you have to have a mining licence to use it?

Dr White—We are applying for one right now. Currently we are getting the lignite from the Morwell mine and we have had it from the Bacchus Marsh pit, which are current mines. There is no shortage of it; there are heaps of it—so much that you will never run out.

Mr PERRETT—It is funny paying a royalty on a fertiliser, isn't it?

Dr White—Yes. So the secret of what Adrian Lawrie has done over 20 years is to work out, as a farmer with 300 other farmers, what to blend it with to turn it into a high-value, concentrated and early-action fertiliser. He does soil tests and blends it to be at its optimum for the soil and the crop.

Mr PERRETT—For that farmer.

Dr White—Yes. It is divided into six different types; you do not have to do it for everyone. But most farmers do soil tests and use fertilisers; otherwise, they would be wasting their money. So that is not new either nor is there extra expense. We blend it with the required nutrients, such as soft rock phosphate; with the trace elements, such as calcium, magnesium and zinc, that you need for the soil; and particularly with a mix of bacteria, fungi and enzymes that the soils need in a proper balance in order to be fertile. We mix that with the brown coal and other nutrients.

Mr PERRETT—It is like a primer.

Dr White—Yes. It has an inoculant of biology to restart the biological activity in the otherwise chemically killed, fungicide killed soil. It is not surprising that, when you spray fungicides, you kill the essential fungi in the soil that is needed for healthy plant growth. We make it in three types. We make a liquid extract of high-concentrate humic-fulvic, which can be sprayed. For example, you would spray it on stubble with a bacteria mix to biologically digest the stubble within six months rather than have to burn it for the next sowing season. We make a powder blend, which can be put out through a circular spreader. Alternatively, we make a high compressive strength granule, which can be seed drilled in the same way as MAP and DAP granules are. So it is a range of products used in a range of different ways. But it is quite inexpensive to make. It is prolific in terms of how much can be made going forward. Our particular coal deposit that is very useful, which is down at Gelliondale, is near to a little port at Barry Point where coastal boats can come in and out, bringing in the inputs and taking out the product to other ports and through to railway lines to the whole of Australia.

Mr PERRETT—Is there lignite anywhere else in Australia?

Dr White—There are lignites in most states. To our knowledge—

Mr PERRETT—Is there an excess of lignites?

Dr White—Yes, there is, but not all lignites are the same. The Gippsland, Anglesea and Bacchus Marsh lignites, by far, have the highest humic-fulvic content in Australia, so they are the most suitable. You can use others. As I say, there is no monopoly on supply.

Mr PERRETT—You do not have to go a million miles underground; this is open cut.

Dr White—It is within metres of the surface. You can mine it for seven dollars a tonne.

CHAIR—It is very exciting.

Mr SIDEBOTTOM—I have said already that we should be doing this anyway, because it has benefits right across the board. Then there is the issue of carbon sequestration or the international carbon accounting rules and whatever.

Dr White—Correct.

Mr SIDEBOTTOM—That is the other issue.

Dr White—Correct.

Mr SIDEBOTTOM—That is something that we all have to work on, in order to incorporate it and give one more positive benefit to the farmers who do it.

Dr White—Correct. I do not know the details, but I think Australia was one of the few parties that argued hard against this in the 1990s, because we lumped it in with tree clearing, diesel, and methane from cows' emissions. Really it is upon Australia now to argue it in, when we helped to argue it out previously. We have lost a decade, unfortunately. This is something we should do because we should do it. We should go to the international community and say, 'We are doing this; we're proving this.' I propose that there be three big demonstration projects: one in WA, one in south east Australia and one in north-east Australia. Do a million hectares in each of those three, sequester a minimum of 15 million tonnes of CO2 a year in each of those and, with CSIRO monitoring—I am talking to them about that and they wish to do it—take that to the world and say, 'This works and we are putting it on our CO2 balance sheet.'

Mr SIDEBOTTOM—And it should be included—

Dr White—And it should be included.

Mr SIDEBOTTOM—internationally to be measured and to be part and parcel of the credit.

Dr White—Supported by the UN FAO—

Mr PERRETT—It is an interim low-hanging fruit.

Dr White—Yes. It is a complementary measure that ought to be done.

Mr SIDEBOTTOM—It is a bridge.

Dr White—But it is the only system that has the potential right now to suck legacy CO2 out of the atmosphere and put it away productively at, arguably, a zero net cost and probably with a positive GDP effect—because our farmers are doing it without a CO2 price. It is the only thing that will draw down the CO2 levels. If we are serious about climate change—I am an old miner, warship builder and industrialist and I believe totally that we are contributing in a major way to aggressive climate change—we have the mechanisms to pull the CO2 down quickly and to achieve improved profitability and improved environmental performance from it. By using this, you can avoid a lot of the nutrient chemical run-off that is poisoning our waterways, our Gippsland lakes and our Great Barrier Reef. This avoids that excess chemical nutrient run-off, so there are major, major alternative benefits.

I have no doubt that we can roll this out rapidly over tens of thousands of farms, if we just give farmers the incentive to make the change with a bit of a payment for those CO2 credits and argue that they should make the change against all the common knowledge of what their fathers did and what the DPI extension officers have told them to do for 20 years. We can achieve our 20 or 25 per cent—certainly our five per cent obligation—of reductions by 2020. This is the only system that will do it. We can therefore save that uncertainty and cost on the balance sheets of all of our big-emitting exporting companies and solve the problem. I do not understand why the country is not picking this up as a solution whereby we can avoid all of this uncertainty and economic chaos.

CHAIR—You propose some pilot projects.

Dr White—Yes.

CHAIR—What would be the cost of those projects approximately—a ballpark figure?

Dr White—I think the main thing is for government to show leadership and say, 'We want to do this.' Just as the government has raised the flag of geological carbon capture and storage and is prepared to spend billions of dollars on doing that—knowing that it will not kick in until 2020 or 2030, if you are lucky and it works and is safe and economic—they should be prepared to spend at least as much money in rolling this out at a sufficient scale, with education of farmers and development of the product systems, to be a solution by 2020 to our total obligation of CO2 reduction. What is that going to cost? It will cost less than what is being spent on geological CCS. I predict that it will cost only a quarter as much as is currently budgeted, because it is mainly leadership and education.

Mr PERRETT—What, $125 million?

Dr White—That is just the first little bit; they are planning billions on geological CCS. But I predict that it would cost well less than $1 billion to roll all of these biological farming systems out. Very quickly, the farmers would be more profitable and, on the GDP balance sheet, we would be saving many, many, many billions.

Mr PERRETT—And you do not have to seed the one next door, because this is the seed?

Dr White—Yes, it will spread.

Mr PERRETT—If it works, the next door neighbour will look over and—

Dr White—They will all adopt it.

Mr PERRETT—then you would not have to drill another hole; it would just keep flowing on and there would be profits for the farmers.

Dr White—Yes. Adrian Lawrie, remarkably for a wheat farmer from near Port Pirie, has developed this product and system and converted over 300 farmers on his own, against all the published wisdom and with a lot of people working against him because he is threatening existing near-monopolies. It is selling because the farmer next door sees his neighbour making more money and having a smile on their face. The women folk know that their husbands are healthier. They have the vet in only about 10 per cent of the time they used to have to call him in, because the animals are suddenly healthy from eating healthy plants and not picking up poisons that are sprayed around the place. It spreads very quickly. I think there are 120,000 farmers in Australia and the infrastructure is out there. They are all well skilled, well connected and, I agree, very innovative and adaptable when given just a little leadership, information and support.

Mr SIDEBOTTOM—You would think the fossil fuel industry would be very interested in supporting this.

Dr White—That is correct. To get the government to listen to this quickly, my strategy is to get a dozen of the country's biggest emitters to come to Canberra with me and say, 'We want this; this will save our balance sheet the uncertainty of carbon pricing in the market.'

Mr SIDEBOTTOM—'And we are prepared to put this amount of money into it.'

Dr White—They will undertake to buy the carbon credits at, no doubt, a very reasonable price because these are easy and cheap to produce. You can argue whether they should be $20 a tonne or five dollars a tonne to the farmer. My view is that, if the farmer got paid for all of his CO2 sequestered every year, five dollars would be more than enough to cause a flood of change very quickly, once they had seen the demonstrators. But, because you can have bushfires, droughts and some reversals of fortune, there needs to be a banking arrangement where only a percentage of the CO2 sequestered in the soil every year is traded and the rest is put in a bank for future fluctuations. That is a normal financial market mechanism; that is not a reason not to do it. Maybe he only gets a half or a third of his sequestered carbon; so it comes from a net price of $20 a tonne to a net price of seven dollars a tonne that he gets for the third that he might be able to trade in a year. But these will be cheap, long-term and reliable carbon offsets for our big-emitting industry. Frankly, I am here not as a farmer or a fertiliser manufacturer yet—that is LawrieCo; I am here as a potential coal developer. But I want to enter into a joint venture with LawrieCo to convert some of our coal quickly into a lot of this product and ship it around the coast so that supply is not a constraint.

There is another thing that we are doing. We have an Australian-developed technology for converting our brown coal into low-sulphur oil, while generating very, very little CO2 in that process. But, when used, the oils that we will make from the brown coal will still generate CO2. So we want to be able to get hold of these soil carbon offsets and staple them to our brown coal derived oil so that it can be sold as zero net emission fuel. How good is that? That is possible

because of the volumes of soil carbon credits that can be generated from all of our degraded farm lands. A million hectares of biologically farmed and fertilised farms, based on the experience of LawrieCo, will generate a minimum of 15 million tonnes of CO2 sequestered a year.

CHAIR—John, thank you very much. It is a very exciting opportunity. We will see if we can get it through to the decision makers.

Dr White—That would be wonderful.

CHAIR—Thank you very much for your time and for your submission. Graham will move that we accept this as an exhibit.

Dr White—Thank you very much.

CHAIR—We will make sure that you get a copy of the transcript.

Resolved (on motion by **Mr Sidebottom**):

That this committee authorises publication of the evidence given before it at public hearing this day, including publication on the parliamentary electronic database of the proof transcript.

Committee adjourned at 4.11 pm