London Assembly Environment Committee – 7 December 2017

Transcript of Item 7 – Particulate Air Pollution

Leonie Cooper AM (Chair): I would like to move to item 7, which concerns particulate air pollution. Again, we are very lucky; we have a very expert panel with us again today, some of whom have been kind enough to come in before and have come back again. We have Elliot Treharne, who is the Greater London Authority (GLA)'s Air Quality Manager. Thank you, Elliot, for coming again. We have Peter McNaught, who is the Director of Asset Operations, London Underground, and who I suspect will be the recipient of our questions about Tube dust and how it can be dealt with. We have Dr Gary Fuller, who is here from King's College London, and we also have Simon Birkett, who is here representing the Institute of Civil Engineers' panel on air quality [Clean Air in London], and both of you will be speaking, I should imagine, across a number of areas relating to particulates and air quality in London. Thank you very much for coming.

What are the main sources of particles in London's air? We are going to try to not keep talking about motor vehicles; we are moving beyond motor vehicles at this point and so do not talk about diesel and petrol engines. What are the main sources of particles in London's air?

Dr Gary Fuller (King's College London): If you were to go outside and breathe outside City Hall, most of the time the majority of particles you would breathe would not come from within London; they come from outside. About 80% of the particles, be they less than 10 microns in diameter (PM10) or less than 2.5 microns in diameter (PM2.5), just roughly speaking, will be coming from sources that are not necessarily within London.

If we think about the London sources, it is hard to get away from transport because it is there as a major source, but we have to remember not only the exhaust diesel issues, which you did not want to talk about, but also, when it comes to particle emissions certainly for the PM10, we have issues to do with the wear processes for brakes, for tyres and for the roads themselves, which are actually now more than the tailpipe emissions.

One thing that is frequently overlooked, which is hitting the policy agenda quite a lot at Department of Environment, Food and Rural Affairs (Defra) and to some extent here at the GLA, is wood-burning, which has arrived more or less under the radar. If we take a typical winter month and if you were to stand outside there for the whole of January, for instance, about 10% of the particles that you would be breathing in would be coming from wood-burning, largely within London. That is a London source.

We have tried to do some calculations because that is 10% of what you would be breathing but, if we think about it from the London proportion, it is somewhere in the mid-20s and low 30s. Somewhere between about 26% and 31% of the particles that are arising within London are coming from wood-burning. I can give you some more detail on that if you want it.

Leonie Cooper AM (Chair): We are going to talk about Tube dust, tyres, brakes, wood-burning and --

Dr Gary Fuller (King's College London): I would happily come back to wood-burning. If I could just quickly say something on this 80% that does not arise in London, you have to be very careful how you understand that. There is a real reflex to say, "If it is coming from outside London, there is nothing we can do

about it. It is not our problem". That is really not the way to frame it. Particles that we emit can stay in the air for a week or ten days. The air that we can breathe here in London today could have been in Paris yesterday and it could be in Amsterdam tomorrow. To say that we do not accept responsibility for that 80%-odd is kind of like, if you imagine going into a smoking room in a building that you might have had 10 or 15 years ago, having half-a-dozen 'benny hedgehogs' (cigarettes), coming out smelling of smoke and blaming everyone else for it. It is a collective air mass that surrounds us that makes up that 80%-odd for which we do make a contribution.

Leonie Cooper AM (Chair): Yet you were saying that there are a whole range of different sources there. Do you think there are any sources that are underestimated in the official figures? Obviously, it is very difficult. We have had Thames Water in here and they talked about the things that move up and down the river. We will not go into that today, but obviously air moves around so much you cannot really control it in that sense. Do you think there is anything that is underestimated in the figures?

Dr Gary Fuller (King's College London): Yes, the big underestimated thing from the London inventory is wood-burning; it is not in there. We try to take account of it through the modelling that we do for the GLA and Transport for London (TfL), through almost a backdoor route. It is added in afterwards, but it is not properly accounted for. We have a large chunk of the inventory that just is not properly covered. There are other sources. You will find that construction is quite a large source within the inventory as well.

Leonie Cooper AM (Chair): We will come back to construction as well.

Dr Gary Fuller (King's College London): Whether that is correctly estimated is a very uncertain area.

Leonie Cooper AM (Chair): Turning perhaps to you now, Elliot, in terms of which sources are likely to reduce under current policies and which you think are then going to remain high. Obviously, as we reduce the percentage amounts coming from other sources, the percentage of those sources may even increase.

Elliot Treharne (Air Quality Manager, GLA): Just to echo a lot of what Gary [Fuller] said there, I think that is a pretty fair summary of what the major sources are. I will come back to you at some point about the background contribution in terms of PM2.5 levels and some of the important work we need to do co-operatively with other European countries and cities, and across this country as well, in order to tackle some of that external contribution.

In terms of what is happening within London, where the policies that we have set out so far really are going to be quite effective in addressing some of that PM2.5 contribution is tyre and brake wear, which is a component of transport emissions that are not actually from the exhaust. Obviously, the Mayor has set out an ambitious target in the Mayor's [draft] Transport Strategy to increase the share of trips taken by walking, cycling and public transport from 64% today to 80% in 2041. That is one of the most effective tools we have for tackling not just the exhaust component but also the tyre and brake wear component, because by getting that switch to more sustainable forms of transport what you in effect do is you reduce that contribution in terms of tyre and brake wear. Construction is a very significant source of emissions.

Leonie Cooper AM (Chair): I believe the Mayor has been quite encouraging to us to do a bit of construction.

Elliot Treharne (Air Quality Manager, GLA): Yes, absolutely, indeed. As we are a growing city and as we want to build more homes, the question about how we do that in the most effective and sustainable way is

very important. Obviously, as the Mayor has said many times, we have tried to use the limited powers we have through the planning system as effectively as we can to put in place emission requirements in terms of construction plants, but also to put in place best-practice techniques that manage emissions from construction sites and from demolition activity, which can also contribute to PM2.5 and other forms of PM.

We think that will have a beneficial effect, but we want to go much further in that area. This is why one of the things the Mayor keeps asking the Government for, is the kind of appropriate and strong powers he needs to be able to tackle emissions from construction machinery and construction sites in pretty much the same way as he can do for the transport side. Part of the reason, as you may be aware, that we talk about transport so much is because that is where our powers are the strongest and where we can have the biggest impact, but we recognise the other sources as well.

Leonie Cooper AM (Chair): Which brings me on to my next point, which is: what sources are completely beyond the current reach of mayoral policy?

Elliot Treharne (Air Quality Manager, GLA): We try to do everything we can with every source that we possibly can do using the tools that are available to us. Sometimes we might not have the right regulatory tools, but we will use information tools instead. For example, one of the things that we are looking at is: what more we can do when it comes to wood-burning around the information and education division? There is an entire discussion about whether more should be done, but again, another thing that the Mayor has highlighted repeatedly is that the current Clean Air Act [1993] is not really fit for purpose in terms of setting the right standards and the right regulations in terms of whether it is any kind of solid fuel use.

What we can do, and what we are looking to do - and there will be an announcement on this in due course - is to use the Mayor's bully pulpit to raise awareness, to ensure that people have the right information, so that we can put information out there during the periods of the worst air pollution. I am sure Gary [Fuller] is more of an expert on this than me. He will talk about some of the air pollution episodes we have had earlier this year in January [2017] that were very much linked to wood-burning, and we saw some very, very high levels of PM2.5. We never ever say we cannot do anything. The case we are trying to make is that we would do more and we would be more effective if we had the right tools.

Leonie Cooper AM (Chair): We have had a quick trot through the main sources of particles, PM10s and PM2.5s. We have talked about the different levers at your disposal, some possibly more direct, some more indirect or more of a nudge around behaviour change, education, and that sort of thing. Looking at the kind of particles rather than necessarily what we can do about them, are there any particles from some sources that you would feel are more harmful than others?

Dr Gary Fuller (King's College London): I have to say I am not a health expert, but I have done many health studies. The current consensus is that we cannot safely say that one type of particle is more harmful than another. If we could then we would be able to get policies that were much more efficient, effective, or efficacious, anyway, in terms of being able to tackle them. We could target them. If you look at the studies that have been published we can cite many things. Some talk about black carbon, others point to tyre and brake wear metals, and there is quite a lot of literature out there that looks at the 'secondary springtime' episodes, including some work that I have done. The safe bet, and really the policy direction at the moment, is just to try to bring down all sources and bring down concentrations as effectively as possible.

Leonie Cooper AM (Chair): I have, broadly speaking, seen a series of nodding heads from everybody on that specific point. Because we are very slightly short of time I am going to take that the answer to my question is,

"No, we just need to tackle them all regardless of source", and I am then going to move on to Assembly Member Russell, who is going to ask about some stretching targets and move straight on.

Caroline Russell AM (Deputy Chair): Looking at limits, standards and targets; why has the Mayor adopted a target that is much more stretching than is legally required for PM2.5 concentration?

Elliot Treharne (Air Quality Manager, GLA): As you are aware, the framework for legal standards in the United Kingdom (UK) is based on European regulations, the EU Ambient Air Quality Directive. That is in terms of the standards for PM2.5 was set to reflect a whole range of factors, not just the best available health evidence. The World Health Organisation (WHO) meanwhile has put in place its own air-quality guidelines, including for PM2.5, and those are based on the best analysis it can do in terms of the health impacts of exposure to PM2.5 levels above 10 micrograms. For that reason, it has established or suggested a guideline limit of 10 micrograms for PM2.5 as an annual mean.

That has been adopted in Scotland. In the United States, they have adopted an annual mean of PM2.5 of 12 micrograms. I think in Japan it is around 15 micrograms, whereas in the UK, based on that European legislation, it is 25 micrograms. The Mayor's position is that, while achieving our legal obligations is very important, we are in this game really to improve people's health and to improve health outcomes. On that basis, we need to be led by the health evidence rather than just the legal framework. As the health evidence suggests a tighter standard is required, that is what the Mayor's ambition is and that is what he has set out in his new Environment Strategy.

Dr Gary Fuller (King's College London): Can I just chip in and support Elliot's point? European law is being criticised for quite relaxed standards, especially on PM2.5. Over recent times WHO has done a lot of work to say that there are substantial health effects in that gap between the European limit value and the WHO guideline. Therefore, there is a lot of pressure there for that to be reduced, and for cities to adopt the WHO one seems very sensible. There is no evidence of a threshold for these effects; therefore, any sensible policy will be moving away from saying, "We have to reach this limit" to instead describe that we must be continually improving.

Simon Birkett, Institution of Civil Engineers London Air Quality Representative): I think for particles the legal limit is about twice the WHO guideline, whereas for nitrogen dioxide the legal limit and the WHO guideline are the same. There is an anomaly there. There is no safe level for human exposure to particles that has really been found. It is to be applauded that the Mayor has set a target for particles that aligns with that WHO guideline, but we should not forget that there is a binding legal limit that will enter into force in around 2020 for particles. Everyone has taken their eyes off that ball. In the Air Quality Directive, there are three separate standards for PM2.5 that start to bite in 2020. Because of the point that Gary made about a lot of particles coming from outside London, it will be really quite difficult, and indeed likely that London will breach that particle legal limit in 2020. There is a lot of action that is needed there.

Caroline Russell AM (Deputy Chair): One of the things that you said was that there is no safe exposure level. Does this mean that temporary elevated particles, like around barbeques and things like that, pose a health risk? Is there a serious health exposure risk from being around smoke, or near a log fire, or something like that? Is that an actual health risk?

Simon Birkett, Institution of Civil Engineers London Air Quality Representative): There are, broadly speaking, two approaches to protecting health. One is an annual mean, which is a sort of average of exposure for people, but there are also short-term limits, and those are set for different timescales. For nitrogen dioxide

it is an hour of exposure to very high levels. For particles it is an average for a whole day. Some work done that perhaps Gary could talk about does show that when particle levels go up you get more people dying the following day. That is what happened with the Great Smog [1952]. It is not surprising these particle levels do inflame the cardiovascular system and do cause heart attacks and strokes. We know, for example, that the London Ambulance Service is quite busy during some of these episodes, but there is quite often a lag of a day or two.

Caroline Russell AM (Deputy Chair): Gary, did you want to come in on Simon's suggestion?

Dr Gary Fuller (King's College London): For the sake of time, I broadly agree with Simon. Most of the evidence on PM2.5 comes from looking at reduced life expectancy though; a lot of the epidemiology. It is difficult to think whether someone is having a shorter life due to peaks or due to their longer-term exposure. The evidence seems to lean more towards the longer-term exposure. Though peaks will contribute, it is the long-term exposure that is important. The new health evidence that is emerging at the moment is starting to be quite troubling, and there is lots of evidence coming out saying that air pollution might be affecting us from pre-birth all the way up to the end of our life. As we learned from studies in the 1990s, it is not just an exposure over a five- or ten-year timeframe; it is a whole life course effect.

Caroline Russell AM (Deputy Chair): Can you quantify the health benefits of moving from the EU legal limits to the WHO-recommended limits across London? Is that quantifiable?

Elliot Treharne (Air Quality Manager, GLA): There was a study done called APHEKOM if memory serves - and Gary [Fuller] might remember more about this - which was done by WHO that did try to set out the benefits of each microgram reduction in terms of exposure to PM2.5. I would have to try to dig out that study for you to share that with you. In terms of broader health impacts, that is something we continually look at and seek to understand, and further work will be done on that with the new London Atmospheric Emissions Inventory next year to start to quantify and build some of that broader case around the benefits of achieving the WHO limits.

The broad rationale for why the Mayor wants to achieve the WHO limits is precisely because of those broader health benefits. I would like to echo what Gary said, that our understanding or the way we express the impacts of air pollution in terms of health is really evolving. In the past we have used life years of mortality lost, or tried to use figures around equivalent lives lost and those kinds of things, whereas also what we need to capture is the full story in terms of potential impacts to a foetus in the womb all the way throughout the course of our lives. It is only when you see that full picture that we fully understand the impact of air pollution as a whole on our health.

Caroline Russell AM (Deputy Chair): On current projections, how close to the WHO levels do you think London is going to be able to get by 2030? At the moment, we are way above.

Elliot Treharne (Air Quality Manager, GLA): We are quite open that it is a challenging target to meet the 10 micrograms by 2030, but that is what we are seeking to do and we have done some analysis to try to understand whether that is achievable. It is, but echoing what Gary was saying earlier, it is not just about action we are taking. It is also about using those kinds of targets, working through organisations like BreatheLife, which is a coalition of the WHO, and United Nations (UN) Environment to get a number of cities in a number of countries across Europe to share that ambition. It is then to use mechanisms like the National Emissions Ceiling Directive or the Gothenburg Protocol to set in place restrictions on a number of countries' emissions, PM2.5, to tackle some of the transboundary effects.

It is definitely about local action more so. We always want to lead from the front; we want to lead by example. Then it is also about that co-ordinated international co-operation, which is also so important. It is also that international co-operation that is going to get the movement you need from some of the big players like vehicle manufacturers to make sure that we are properly addressing the impacts of tyre and brake wear through better design, better engineering and better materials. It is achievable by 2030. The objective is to get to 10 micrograms by 2030, but in order to do that it will require a collective environment and the Mayor cannot do it by himself.

Dr Gary Fuller (King's College London): If we want to start getting down to those levels, there is another sector as well that we are going to have to think about and that is agriculture, which is not normally on people's radar.

Caroline Russell AM (Deputy Chair): What in particular from agriculture?

Dr Gary Fuller (King's College London): Ammonia from agriculture. You have to say, "Why do we get all of these particle episodes in the springtime?" It is linked in part to the use of ammonia fertiliser and muck spreading during springtime for agriculture, for growing crops and so forth. Better ways to do that would result in less ammonia entering the atmosphere --

Caroline Russell AM (Deputy Chair): Does that mean less intensive, less chemical-based farming?

Dr Gary Fuller (King's College London): From some of the work that has been done, it involves changing the way in which we look after animals and changing the way in which we apply fertiliser to fields. You go out in the countryside and you see a large tanker just spraying muck all over fields and throwing it up into the air, whereas injecting your fertiliser into the soil directly, for instance, is one mechanism.

Simon Birkett, Institution of Civil Engineers London Air Quality Representative): It is worth saying that the WHO was due to revise its guidelines next year. That has been postponed to 2019 and I will bet you a fiver that those guidelines will be coming to a lower level than they are currently.

Caroline Russell AM (Deputy Chair): I do not think anyone is going to take that bet on. What about the effect of the UK leaving the European Union (EU)? If that goes ahead, could that have any effect on UK limits and our policy on air pollution?

Elliot Treharne (Air Quality Manager, GLA): Obviously, it is not for me to speak for the Government, but as I understand its proposals, existing European legislation is going to be transposed into UK law. In the future, there is an opportunity for the Government to adopt tighter standards. That is something that the Mayor has called on it to do in the new Clean Air Act, which would include enshrining in law a legal right to clean air and also setting a requirement to meet this 10 microgram PM2.5 annual mean target.

Putting aside the politics of leaving the EU, we are still going to be part of the European continent. The question then becomes how co-operation can continue. Whatever the future relationship with the EU looks like, it is to ensure that countries and cities can co-operate to tackle transboundary sources of pollution. Pollution does not respect national boundaries and we still need to find an effective way to tackle the impact of pollution generated somewhere else; also, as Gary was explaining, the pollution we generate impacts other people.

Dr Gary Fuller (King's College London): There is a mechanism of course through the Gothenburg Protocol set-up. Acid rain and all those issues from the 1970s are still very, very active and that joins together far wider than Europe, far wider than the EU, for instance.

Caroline Russell AM (Deputy Chair): Sorry? What is far wider than the EU?

Dr Gary Fuller (King's College London): The Gothenburg Protocols looked at this whole issue of air pollution movement between countries and was set up to deal with the issues of acid rain from the 1970s, without going into it in too much depth. They extend geographically far bigger than the EU, and we are a signatory to this, and it does set up a mechanism for countries to collaborate on exactly these types of issues.

Elliot Treharne (Air Quality Manager, GLA): That is under the auspices of the UN, so it is a different international framework as well.

Dr Gary Fuller (King's College London): On future projections, I would like to point out some things. My colleagues at King's have been looking at future energy scenarios for the UK. Some of these energy scenarios that meet the Climate Change Act [2008] requirements may bring about quite a lot of increase in things like wood use in terms of heating and also things like Combined Heat and Power (CHP) so bringing high emission sources and energy generation back into urban areas. Some of the scenarios they have going forward show that outside cities air pollution may improve quite quickly, but within cities it may not improve as fast or make very little improvement on today.

Leonie Cooper AM (Chair): We might come back to an element of that in one of our future questions.

Shaun Bailey AM: Just to focus on the non-tailpipe effects of transport in and around London, what policies at both GLA and national levels do you think would help reduce those emissions?

Elliot Treharne (Air Quality Manager, GLA): Just to put it in context - and we are doing more work to understand about this - something like 75% of the emissions from road transport in terms of PM2.5 come from tyre and brake wear. It is the really big segment that we need to have a clear plan to tackle if we are going to achieve the WHO guidelines.

In terms of things that are effective, I already talked about probably what we think is the most effective intervention, which is a mode shift away from private car use towards more walking, cycling and public transport and more sustainable modes of transport. Reducing the number of vehicle kilometres driven reduces the amount of tyre and brake wear that can occur, if you see what I mean. That will also reduce that contribution in that way.

However, we obviously recognise that there is going to be a need for vehicles in London in the future and the objective there is to switch those to zero-emission alternatives. The zero emission of course tackles the exhaust contribution. We have got to think about how can we use that switch to new types of vehicles and new technologies as an opportunity to build in other improvements as well? One example is that potentially regenerative braking, where you are trying to use the braking cycle to provide additional energy for the battery, can be structured in such a way as to minimise tyre and brake wear emissions. There is some good practice; not all manufacturers do it in the right way or the best way. Again, how can we work and generate that kind of expectation that manufacturers should be producing that kind of technology? We can do that in co-operation with other cities and countries.

Then the other thing of course is in terms of the actual materials used in tyres and to make sure that they are as robust as possible. There is a potential role for some kind of regulation around that to help ensure that we see a decline in terms of the brake wear component of tyre and brake wear as well.

Dr Gary Fuller (King's College London): For the sake of time, I will agree with just about everything Elliot said, but I will just add that this is a very real issue. We have done a project looking at air pollution next to roads in London and we are finding that PM2.5 levels next to the roads from traffic are coming down as we expect. These are particle filters. What we are finding in PM10, the larger component, is this decline from the exhaust is being offset by an increase in some places in tyre, brake and road wear. This is particularly on roads where we are seeing an increased number of heavy goods vehicles or on roads where traffic is increasing. It is a very real issue.

Shaun Bailey AM: What are manufacturers doing around the technology? Are we looking at tyres? I understand that tyres are the way they are because they give good fuel efficiency: the materials, the tread patterns or whatever. Is there a tension there between low particulates and good mileage?

Elliot Treharne (Air Quality Manager, GLA): The issue we have with tyre and brake wear is because so much of the energy and focus has been on exhaust emissions, this has been an area where an insufficient amount of research and understanding has taken place. Part of the reason for us setting such a tight and ambitious target in terms of the WHO limits and why we want lots of cities to sign up to that through BreatheLife is because we think that will be the spur to drive that kind of research and development you need in technological solutions, so you do not need to have that trade-off. Until you have some of that investment and some of that research, we just do not know enough about what the best or most optimal structure of those solutions is. We know through a whole range of different bits and pieces that it is possible. It is just about making sure that that is done in the most cost-effective and the most neutral way in terms of things like fuel efficiency.

Shaun Bailey AM: Just to slightly move on to modal shift, we are talking about moving to public transport and the big contribution that could make, but of course our buses in particular. London is very fond of buses for very good reasons. What are we going to do there? Obviously, they have bigger brakes and bigger tyres; they are effectively heavy goods vehicles (HGVs) except they are carrying people. What is the tension there? Are we going to get the reduction we want if we all then move to public transport?

Elliot Treharne (Air Quality Manager, GLA): Even from a switch to a bus, just from the basis that a bus can take - I cannot remember off the top of my head - 125 people, something like that, a single bus versus lots of individual cars is going to reduce the total amount of tyre and brake wear. You are right: innovation in the bus fleet is something that London has a really proud track record of and we have really driven that, the development of new buses technologies like electric and hydrogen, even the hybrid buses. Again, much in the same way, I was talking about what we need to do with manufacturers to do the right kind of research so that we can fully understand the right calibration of regenerative braking to maximise the benefits in terms of reduced tyre and brake wear. We now need to start pushing our manufacturers to meet that challenge in exactly the same way they did by producing a double-decker electric bus or a double-decker hydrogen bus. There is huge ambition in this sector, there is huge ambition from the Mayor and the two can come together quite nicely to deliver solutions.

Shaun Bailey AM: One of the problems I foresee about electric vehicles from a charging point of view from this regenerative brake view is lots of manufacturers are doing lots of different things. Are we heavily involved in producing a standard or are we just hoping that someone will win that competition?

Elliot Treharne (Air Quality Manager, GLA): No. Again, I think that what we have done in the past on the buses – this was on the exhaust side when we wanted to secure that switch to zero exhaust emissions from the bus fleet – is we very much drove the development of some of those solutions by setting out what the ambition was and what we as cities wanted to achieve. We did not view that just alone as London. We did that in partnership with 26 other cities through the C40 Climate Change Leadership Group. By doing that, we set out very clearly what the expectations of cities to do that procurement of these buses were. Then, as a result, they responded to that.

We have just recently published the *Fossil Fuel-Free Streets Declaration* with C40 in a similar way, so we will set out the need to tackle tyre and brake wear as well.

Shaun Bailey AM: You have set out a minimum performance you would like from a bus and they can achieve that?

Elliot Treharne (Air Quality Manager, GLA): Broadly speaking, yes.

Shaun Bailey AM: Just to move on to speed, reduction of speed and the reduction in traffic, there is lots of talk about 20-mile-an-hour zones. They are not universally popular and they are often not observed because the road looks like it is capable of more. People are used to driving at 30 miles-an-hour. To what extent do you think that a reduction in speed helps a reduction in particulates? Is that proven or is it anecdotal?

Elliot Treharne (Air Quality Manager, GLA): There is some work around that, and Gary [Fuller] might want to jump in because he is probably aware of more of the studies than I am. That is an area in terms of the air quality benefits. What we definitely do know is that acceleration and deceleration – speeding towards a traffic light or whatever it might be – is not helpful in terms of engine performance. On acceleration is when you get the highest engine emissions, especially when you are going from a relatively low speed and a low temperature. Likewise, when you are braking very suddenly, the basic thing that you see on the road is skid marks. That is tyre and brake wear in action.

Minimising that and getting a smooth flow of traffic is positive in terms of its air quality benefits, but also probably in terms of people's frustration. It is always much easier if you are going along at a nice steady speed if you are driving. Obviously, that is an area where we are doing more work and we are seeking to understand that, and there are a whole range of broader reasons why 20 miles per hour is important beyond air quality, most importantly around road danger reduction.

Shaun Bailey AM: When we talk about driving and smoother transition driving, how are we expected to achieve that? Is it a case of public education: drive more slowly, drive in a particular manner, drive a particular type of car? Is it a technological response? I find it quite hard to understand how I am going to drive any more smoothly than I do now.

Elliot Treharne (Air Quality Manager, GLA): This is not something I am suggesting for ordinary drivers, but we did something with the bus fleet to address exactly that problem of acceleration and deceleration and erratic speeds, not only for the air quality benefits but also for the passenger experience perspective. On the dashboard, we have a kind of green, amber and red light, and depending on how jerky and how high the acceleration of the driving is, that light will go up into the red zone and, of course, the telemetries are all recorded. Therefore, if the driver keeps getting into the red zone, at the end of their shift, their trainer will say, "What was going on in your shift? You were not driving very smoothly", etc. That provided one mechanism to providing feedback. That is certainly what we did with our own bus fleet and has been quite effective in terms of reducing that kind of jerky travel.

Shaun Bailey AM: It is like a Formula One driver, the telemetry, in a race, but I get it with bus drivers, professional drivers, a lot of support. What are we going to do with the public, who drive their own cars around in their own kind of way? Some local authorities have done a lot around idling which is basically cultural driving: turn the engine off. This smoother driving in combination with lower speeds, I wonder how we are going to impress that upon your everyday driver.

Elliot Treharne (Air Quality Manager, GLA): That is a very good question. In the past, I know TfL has done work around that as part of its Smarter Travel programmes. I do not know what it is doing currently. I am sure it is doing something, so I will probably have to take that away and bring that back to make sure I give you a fully informed answer.

Shaun Bailey AM: Will the rise in electric vehicles help this non-tailpipe particulate reduction? Is that one of the big hopes or will it just be a small part?

Elliot Treharne (Air Quality Manager, GLA): Again, it is about having a coherent, comprehensive approach. The first thing I think I mentioned, and which is absolutely critical in terms of our plans around air quality but also creating a more liveable city, is absolutely to get this mode shift towards walking, cycling and public transport. That is the first building block. As I say, we also recognise there are going to be vehicles that remain, and yes, absolutely, with a vision for those for a zero-emission city in terms of tailpipe emissions, but we also want to tackle the tyre and brake wear. As I was saying, the design of those electric vehicles and those other zero-emission-capable vehicles could be absolutely intrinsic to the solution to tyre and brake wear.

Shaun Bailey AM: Should we not be doing something around delivery? London's big thing is delivering the last mile with a smaller vehicle. Companies across the world have come up with very large trucks to deliver. Where is that group of cities pursuing the small, white van that we have ubiquitously across London? Is that being pursued as well?

Elliot Treharne (Air Quality Manager, GLA): There is a lot of work already going on in London in terms of consolidation and also then the use of things like cycle freight for the last mile of delivery. Again, that provides a mechanism for much lower levels of tyre and brake wear. I think you are right. We also need to work with industry, and you are seeing this in America. Companies like Tesla are already coming forward with much, much larger vehicles which are basically electric, and that then provides a mechanism for us to reduce emissions from the freight sector.

Dr Gary Fuller (King's College London): I was just going to make a few observations. On the electric car tyre and brake wear issue, some studies have suggested that electric vehicles tend to be heavier than non-electric ones and the tyre, brake and road wear would, therefore, be greater. The challenge is to build lighter electric vehicles.

There was another point on freight as well. If you were to ask your transport colleagues here sitting in front of you, they have a very good idea where people move around, but we have very little idea or much less idea on the movement of freight. TfL has a fantastic statistic, which I was trying to recall the number of, light goods vehicles out there that are mostly empty, and I think it is 39% of them that are travelling around that are less than a quarter full. There is a real need for greater efficiency within the freight sector, and largely we leave freight to the market. It is a free market in the delivery of freight, whereas for the movement of all of us around London, then the city authorities play a role, of course, in public transportation planning.

Shaun Bailey AM: Just a plea that we use the river more. We have a superhighway that goes entirely through London.

Elliot Treharne (Air Quality Manager, GLA): The river is a fascinating question, and I agree totally with you in principle. We need to use the river more. The question is, how do we ensure that the river is as clean as road transport, even cleaner ideally? You do have a challenge in terms of some of the engines of river vessels

being very old and very polluting. Of course, there is no effective mechanism for one regulator to manage emissions on the river currently.

Shaun Bailey AM: Mainly it is power the Mayor needs, but, Chair, I am going to stop there.

Elliot Treharne (Air Quality Manager, GLA): The Mayor would probably, definitely agree with you on that.

Leonie Cooper AM (Chair): Yes, thank you, and you were just talking about smoother driving of vehicles and, of course, the river buses do sometimes create environmental degradation by speeding up very quickly and slowing down very quickly, representing a riparian borough as I do. It is an issue that has come up for me in casework.

However, I am going to move on to construction and industrial pollution and I am going to ask Assembly Member Gavron, who is obviously one of our planning and housing experts, to ask some questions about the implications of all the construction that we have now and are planning.

Nicky Gavron AM: What can the Mayor do through his policies to make sure that we reduce emissions from construction and other industries?

Elliot Treharne (Air Quality Manager, GLA): The strongest power that the Mayor does have over construction is through the London Plan and through planning policy. As you will have seen in the new draft London Plan, we have a strong policy in terms of the planning requirements that should be put in place in terms of both the construction machinery that is used on a construction site but also the techniques that are used in terms of construction and demolition as well.

Nicky Gavron AM: Are these new policies, Elliot?

Elliot Treharne (Air Quality Manager, GLA): We have always, or for a long time, tried to use those kinds of levers. What we are doing and what will be announced shortly is what additional activity we can take in terms of construction. What the Mayor wants to do and what he has lobbied Government to do is he would like stronger powers in relation to construction machinery in particular, so he can put in place, for want of a better phrase, a Low Emission Zone for the construction plant used in construction sites. The reason that is important is that through the construction system and, as you will be aware, through the planning system, the sanctions that can be applied if a site is not conformed to with the planning permission given are either quite extreme or very, very weak.

Also, basic things like in the same way someone who needs to use a very specialist vehicle will choose to pay a charge to drive that vehicle, on the 'polluter pays' principle, under the Low Emission Zone. On a construction site, we basically have no alternative other than to give an exemption to that site because it is not possible to get another piece of equipment which would be able to meet the emission standards. We have a general principle that we do not put in place an impossible-to-meet standard. As a result, it becomes very difficult to effectively manage construction sites and the emissions from those sites.

Nicky Gavron AM: You are saying that the Mayor needs to get better powers for that.

Elliot Treharne (Air Quality Manager, GLA): Absolutely, but, as I said earlier, what we are doing is what we can do, which is using the planning system to try to put as much pressure on to the organisations that do construction to ensure that the plant is as clean as possible and meets the emission standards that we have set out in the London Plan.

Nicky Gavron AM: You have guidance on this already, have you not?

Elliot Treharne (Air Quality Manager, GLA): Yes.

Nicky Gavron AM: Is it Supplementary Planning Guidance?

Elliot Treharne (Air Quality Manager, GLA): Yes, correct.

Nicky Gavron AM: It is. How is it enforced?

Elliot Treharne (Air Quality Manager, GLA): This again goes back to the point around powers and why the Mayor is so keen for powers. The Mayor has funded, through the Mayor's Air Quality Fund, either £400,000 or £500,000 to enable 17 boroughs to share some enforcement officers to go and enforce those standards as set out in the Supplementary Planning Guidance. Again, that is not ideal. If you had a system a bit like the Low Emission Zone for vehicles, you would have potentially people choosing to pay to pollute. That would bring in an income which would then mean that you had a sustainable scheme where you could fund the enforcement of that scheme rather than rely on the boroughs who obviously have very stretched resources. Some do enforcement very, very well; others do not. That is why, on a temporary basis, we try to provide additional funding to them to do that enforcement. Clearly, we want to try to put this on as sustainable a footing as possible.

Nicky Gavron AM: How much are you working with the industries themselves?

Elliot Treharne (Air Quality Manager, GLA): Hugely. What we have done is establish a construction committee, a non-movable machinery committee which brings together the main construction representatives of the construction companies, the main plant company representatives, the retrofit industry. It brings those together, and they have helped us design the standards and the approach that was adopted. In doing so, we are hoping to get buy-in from the industry and, through that goodwill and that voluntary co-operation, ensure a far higher rate of compliance.

Nicky Gavron AM: What about incentivising building technologies which reduce the amount of dust, diesel fumes, etc, on site?

Elliot Treharne (Air Quality Manager, GLA): Do you mean on sites or as part of the actual new development itself?

Nicky Gavron AM: As part of the new development and on sites, actually.

Elliot Treharne (Air Quality Manager, GLA): I can answer both of those. Through Air Quality Positive, which is one of the proposals set out in the new draft London Plan, which is a brand new approach outlined by the Mayor, for major new development areas, opportunity areas, planning frameworks, those kinds of things, what we exactly want to do is build in and design in improvements to air quality by reducing exposure, by reducing the contribution for transport sources, by making it easier to walk or cycle and use public transport, and by doing that have a positive contribution from those new large developments to the local air.

Nicky Gavron AM: Do you think then offsite manufacturing will be factory-built homes which can be craned in, where you can go to a site and all around you there are cranes and there is noise and there is dust? On that site, it is pretty silent. Do you think then offsite manufacturing, which is the Mayor is pretty committed to, is going to be a way forward?

Elliot Treharne (Air Quality Manager, GLA): Yes. We definitely want to take advantage of any new approach and maximise improvements through innovation and through technology. We will be working closely with our planning and housing colleagues to take advantage of those kinds of improvements.

Nicky Gavron AM: It sounds as though up until now you have not really --

Elliot Treharne (Air Quality Manager, GLA): No. I think that is an area we can do more in and that is something I will definitely take away and make sure my team explore.

Nicky Gavron AM: Yes, because it cuts down on the transport deliveries and it also cuts down on the exposure of everyone on site. Also, of course, all the particulates and so on.

Elliot Treharne (Air Quality Manager, GLA): Absolutely, and our planning colleagues in particular and the housing colleagues are looking holistically at how they can manage the whole range of different impacts and benefits that can be achieved through the Mayor's ambition around --

Nicky Gavron AM: It needs to be fed into the draft Housing Strategy because it is not there. OK, that is helpful.

Leonie Cooper AM (Chair): That needs to be fed into the draft Housing Strategy by tomorrow I think.

Simon Birkett, Institution of Civil Engineers London Air Quality Representative): I am here on my best behaviour representing ICE London Air Quality Taskforce, which produced this report. It was 18 months' work and the taskforce did a really great job. It is focused on five themes, which are transport, planning, water, new technologies and industry practices, and came up with ten specific recommendations. I would just like to give you a flavour of two or three of those to answer Nicky [Gavron]'s question.

Leonie Cooper AM (Chair): Just because we are a bit pressed for time and I am conscious that there is a couple of Members who would like to get away, what would be really helpful is if you could send us the ten recommendations. Indeed, I do not know if the report is either available in hard copy for us to have or perhaps as a portable document format (PDF).

Simon Birkett, Institution of Civil Engineers London Air Quality Representative): Both.

Leonie Cooper AM (Chair): It would be really useful to have that as part of our considerations because we will be producing some recommendations. We have already identified quite a long list from today of areas that are worthy of recommendations from us that need further and deeper consideration. Would you mind if we approached it in that way?

Simon Birkett, Institution of Civil Engineers London Air Quality Representative): That is very sensible.

Leonie Cooper AM (Chair): Thank you very much for that, Simon. That is really helpful. I am going to move on to David, and we are going to come back to the issue of heating and particulate emissions. I suspect the words "wood-burning" and "stoves" and possibly even "pizza ovens" may crop up.

David Kurten AM: We talked about wood-burning in homes earlier. I was surprised to get the figure of 26% to 31% of London's PM is generated from wood-burning. How do you think the Mayor can help to reduce particulate emissions like those from wood-burning from London's buildings?

Elliot Treharne (Air Quality Manager, GLA): The Mayor has set out a three-pronged approach around how he wants to tackle emissions, particularly around wood-burning stoves, although open fires are also a significant issue as well.

Around wood-burning stoves in particular, the Mayor has said there is a significant role for education information. Most people do not know how they need to maintain the wood-burning stove they have. They do not know about the difference between the types of fuel you can put in it in terms of between wet wood and dry wood, for example, which can have a very significant impact in terms of emissions. Wet wood is something like 50% higher in emissions of PM than dry wood. Of course, it is possible to buy that wet wood in London and often at your local petrol station. People are often thinking, "Oh well, if I can buy it, it must be allowed". Of course, sometimes even though it is perfectly OK to sell it, it is not always necessarily OK to use that fuel. There is a big piece around education and information. Woodsure, which is an industry group, has

come together to put together what it calls the 'Ready to Burn' mark, and that is one way that we can practically provide education to people, that if you are looking for that kitemark, then you are going to be getting the right kind of stuff to burn in your wood-burning stove.

There is also a point around when people choose to use their stoves, and I am sure Gary [Fuller] will come on in a moment and talk about some of the episodes that we have experienced. We know there are particular times of year and particular atmospheric conditions which can be very negative in terms of the impact of using your wood-burning stove.

How do we get the right information out there so people know that this is a time when it would be great if you did not use your stove? In San Francisco in the Bay area, they do a lot of work around those kinds of episodes through a campaign they called Spare the Air. That is just an information campaign. It is often on the radio. It lets people know this is a period of very poor pollution. It is not a ban or anything like that. It is just about letting people know and making their own choice and trusting people to make the right choice, which, in my experience, most of the time people do.

The Mayor also wants, for new wood-burning stoves, the ability to make sure that the cleanest, best technology, meeting the tightest possible emission standards, is installed in London. This again comes back to the Clear Air Act, and this is why the Mayor keeps going on about the Clean Air Act that we currently have not being fit for purpose and why he wants to have a new Clean Air Act, which, rather than referring to grit and dark smoke like the current Act does, refers to a modern understanding of pollution and enables us to set tighter standards and the Mayor to do that himself in London.

This is again working with industry. There are already Ecodesign-labelled wood-burning stoves ready to go. The question of the Mayor is why we cannot make that standard that is used in London. Why cannot we encourage people to buy the cleanest possible wood-burning stove? Again, it is not about banning or stopping a certain behaviour. It is about doing it in the most responsible way possible and working with people in order to do that.

Dr Gary Fuller (King's College London): May I interject for just a moment? Almost all you said is about wood-burning stoves. The Department of Energy and Climate Change (DECC), when it existed, did a national survey which is the one that really put wood-burning on the agenda. Part of what it did was to find out how many people are burning wood in each of the Government areas and, importantly, how they are burning wood. The results for London were that we are not the area with the greatest wood-burning. They found about 7.5% of homes are burning wood, which you should reflect on in terms of the 25% to 31% of PM emissions.

The most interesting thing they did find is the way in which people are burning wood. Nationally, it is about half and half open fires and stoves. In London, 68% of the people that they found who were wood-burners were doing so in open fires. That stood out nationally as being a very different amount.

We know from the Clean Air Acts of the 1950s, 1960s and so forth that almost the entirety of London, apart from a few parts in the fringes, Beacon Hill and so forth, are smoke control areas. That bans the burning of wood in open fires. In terms of where we are in terms of the current legislative framework, people should not be doing this. The 68% of people that are burning wood are doing so in an appliance that does not meet the law.

David Kurten AM: Illegally.

Dr Gary Fuller (King's College London): This is important for another reason. The stove industries would be very keen to tell you this. If you look at the efficiency of an appliance and the amount of emissions, we have a hierarchy. If an open fire would be emitting, let us say, ten units, a bad wood-burning stove would be somewhere around five and the best ones might be somewhere around two. We have a disproportionally high number but they are very high emitters. That is a good target for action.

Another thing is to say that no wood-burning is good for the environment of a city, and most of what we see in London, everybody out there, all of those lights, they have alternative ways to heat their homes, mostly by gas and also by electric. People are choosing to burn wood because it looks nice. It is a lifestyle choice. It is decorative for the most part.

David Kurten AM: Do you think some people think it is good for the environment?

Dr Gary Fuller (King's College London): Yes.

David Kurten AM: They are very, very misguided on that and it is also a very trendy thing to do at the moment. Is that an issue that can spiral in people's perception?

Dr Gary Fuller (King's College London): Completely. Go into WHSmith and pick up a copy of "Look at my Lovely Home" magazine and you will find it packed full of wood-burners, or look at Grand Designs; it is a desirable thing to do and to have in a home. We have been told - and we warned about this in a paper we did with Paris and Berlin some years ago - that there is a language around wood-burning, and if we are encouraging wood-burning as a carbon-neutral fuel, then part of the side-line is we have to discourage people using it at home or thinking they are doing something environmentally good by burning wood at home.

One of the things that came out of a recent Defra report - and the actual numbers just left my mind - was that if you were to compare even the most modern wood-burning stove to the emissions from the most modern HGVs, having a wood-burning stove is similar to about six or seven HGVs. Each time you think of the most modern wood-burning stove, you think, "Well, should I tolerate this? Should I inflict this on my neighbours?" It is like driving half a dozen modern HGVs up and down your road all evening. Would you inflict that pollution on your neighbours?

Nicky Gavron AM: One evening?

Dr Gary Fuller (King's College London): For the time that your modern stove is going.

Leonie Cooper AM (Chair): What you are suggesting is it needs to be become unacceptable. Where people used to think that having a cigarette - and we saw lots of adverts - was very cool, and it was in *My Home* or *Going Out* magazine or whatever you can pick up at the newsagents, we need to make using your open fire or wood-burning stove at home as uncool as me lighting up a cigarette here and blowing smoke in the face of everyone in the room.

Dr Gary Fuller (King's College London): Yes. There is quite a bit of evidence, not so much that you are exposing yourself indoors, but your neighbours --

Leonie Cooper AM (Chair): Your neighbours.

Dr Gary Fuller (King's College London): Certainly, on still, cold nights, there is lots of evidence that wood smoke builds up in a neighbourhood and that builds up at the time when everybody else is at home.

Leonie Cooper AM (Chair): Doing the same. Passive wood-burning is the same as passive smoking. It is not very good for other people.

Dr Gary Fuller (King's College London): Yes. I would not use that language, but if you think about the multiplier or concentration and then the number of people exposed, we burn wood in residential areas at the times when everyone is at home. That multiplier of concentration times the number of exposed people is quite high. There have been some Canadian studies done in framing it in this way and saying that even modest amounts of wood-burning can have quite a large effect or larger than the smaller number of people that are next to those.

David Kurten AM: You are saying this is a really huge issue that I do not think anyone realises the danger of. Can I just pick up on something else related that you mentioned, something about energy production moving into the cities? I am not quite sure --

Leonie Cooper AM (Chair): David, I am going to stop you there because I am going to have to move on to Joanne [McCartney AM] and shield those questions because we need to finish at 5.30pm.

Dr Gary Fuller (King's College London): I am happy to briefly pick it up.

Leonie Cooper AM (Chair): I am really sorry, yes. If you have anything on that, that would be really helpful. I am really sorry. I think we have done that question; we have exposed it is really quite a difficult area and something we need to be tackling.

Joanne McCartney AM: Obviously there has been a lot of press lately about particulates on the Tube. Can I ask you if you are concerned about it?

Peter McNaught (Director of Asset Operations, London Underground): If I start to explain where concern was in the past, this came on particulates on the Underground. Going back to even as early as the 1970s, there were concerns around dust on the Underground. Back then, it stemmed around asbestos from brakes and construction, some of the materials we used. Obviously, those have been removed systematically and we have taken it out of brake blocks. We talk now about PM2.5 and PM10. That became recognised aboveground as a way of measuring air quality.

In the late 1990s, researchers took that measurement technique down into the Tube, and the results were quite high, and those results were published and caused concern. We commissioned the Institute of Medicine to carry out research into that, and in 2004 they published a report that showed that the reason the readings were so high was because they were measured by size and mass. The main source of our dust comes from the wheel rail interface with the iron, which is quite heavy.

We have been working in the guidelines of that report and keeping our dust levels below the health and safety exposure limits for that particulate size and also trying to aspire to the Institute of Medicine guidelines on that particulate size which, when it comes to respirable dust, is four times lower than the health and safety exposure limits.

Recently, there has been press around potential links between iron and possibly Alzheimer's disease. We were conscious of those press releases and we are obviously doing everything to try to bring the dust levels down. In August [2017], we commissioned the Committee on the Medical Effects of Air Pollutants (COMEAP) to carry out further research, a literary research for us on any research since the 2004 report, to see if there was any other advice they could give us based on any other research that has been found. That report is due to come to us in the spring, and when that report comes to us then we will take that advice and try to comply with that advice.

Joanne McCartney AM: What, if anything, do you think can be done to reduce the number of pollutants? It is quite a sealed system, is it not?

Peter McNaught (Director of Asset Operations, London Underground): It is, yes. We are doing things all the time. In the purchase of our new trains, the new trains have regenerative braking. My colleague mentioned about the cars, but in the trains, it is further advanced. All of our trains now have at least rheostatic braking. We have three fleets that are rheostatic, which take the momentum of the train and turns it back into electricity and dumps it into a big resister, whereas regenerative braking takes the momentum of the train and puts it back into the electricity supply so other trains can use it. Every single train we have now has that technology which allows the train to slow down to as low as 15 kilometres per hour before the brake locks come on, and that is where you get some of the dust from. We have done that.

We have also looked at technology when we are doing our renewal work. When we are replacing track, we look at technology to do concrete breaking. Rather than using jackhammers which are very noisy and very dusty, we use concrete breaking which breaks off big lumps of concrete: much less dust. All of the ballast we use, we soak it before we bring it in to get rid of any dust so that when we use it in the Underground we are minimising the amount of dust that we create.

Joanne McCartney AM: OK. Obviously, there is something on your more automated trains with software but also driver behaviour. Is that --

Peter McNaught (Director of Asset Operations, London Underground): Driver behaviour. As you know, we have introduced the automatic train on the Northern line and the Jubilee line. We have the Four Lines Modernisation (4LM) project across the whole Signalling Solutions Limited (SSL) railway which will automate the railway. Suddenly, we have control of how every train accelerates and every train brakes, and it no longer relies on the driver having defensive driving.

Simon Birkett, Institution of Civil Engineers London Air Quality Representative): Clean Air London has published several things on Tube dust and is very dissatisfied with the way that TfL has approached this over many years. Levels of particles in the Tube are about 20 times what they are at certain places in London, bad places in the Tube versus places in London. We have had letters from Boris [Johnson MP, former Mayor of London] which said, in effect, driving at the speed limit is safe. That is clearly a ridiculous thing to say but that is the sort of reply we have had about particle levels being safe at the maximum guideline-type levels for workers' health and safety. I am very glad this Committee is looking at it. This is a very serious issue. Proper warning should be issued. We should be having barrier doors on platforms on Tubes which has been effective at reducing people's exposure in other countries. There is a lot that ought to be done in this.

Joanne McCartney AM: That was one of my next questions. Where can we learn from? This cannot just be a problem in London. What do those doors --

Simon Birkett, Institution of Civil Engineers London Air Quality Representative): Like the Jubilee line doors. At Westminster Station or something like that where you have the platform barriers and the doors open and things like that.

Joanne McCartney AM: It is like a semi-seal between the tunnels and the platform.

Simon Birkett, Institution of Civil Engineers London Air Quality Representative): Yes.

Elliot Treharne (Air Quality Manager, GLA): On that point, it is very, very difficult to seal off the train running area from the platform because when a train comes into the station, there is a lot of pressure; you can feel the air pressure.

Joanne McCartney AM: You can, yes.

Dr Gary Fuller (King's College London): The pressure is very hard to separate with any sort of engineering screen. One of the most helpful things that has happened for some time, and this is an important issue, from the limited amount of measurements we have made on the London Underground, the particles down there are very different to what we have up here and out there in the street. Peter [McNaught] was saying that COMEAP, which is the Government's medical advisory committee on air pollution, are looking at this and that is very helpful and should help us to be able to frame this problem. Should we be framing it in the way that Simon [Birkett] is saying or should we be saying that the nature of the particles is different and that means there is either a greater or a lesser health effect than you would infer? That is going to be very helpful for taking this problem forward.

Joanne McCartney AM: Can I ask, Peter, is their report going to be made public?

Peter McNaught (Director of Asset Operations, London Underground): Yes.

Dr Gary Fuller (King's College London): The COMEAP reports are normally published.

Simon Birkett, Institution of Civil Engineers London Air Quality Representative): All I have just said, I tried to agree with TfL at the beginning of last year what questions would be asked of COMEAP and what resources would be given. They would not accept the sorts of questions that I thought they ought to ask COMEAP. It was meant to be at the beginning of last year, not spring next year. This has been a very frustrating experience and I do not think TfL is taking it anywhere near seriously enough.

Leonie Cooper AM (Chair): If I might say so, it sounds like something we might wish to track through this Committee and check that that report is being produced on time because certainly both Gary [Fuller] and Simon have raised some interesting points about this whole area. We knew that it was an area that we might wish to devote some of our time to, although, at this point, not an entire meeting. Perhaps when the report comes out in the spring, we will be tracking to see that that happens, and we might wish to bring guests back in to have another focus on what has emerged from that report depending on the content.