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REPORT OF PROCEEDINGS BEFORE

GENERAL PURPOSE STANDING COMMITTEE No. 5

INQUIRY INTO THE M5 EAST VENTILATION STACK (2002)

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At Sydney on Friday, 15 November 2002

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The Committee met at 10.00 a.m.

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PRESENT

The Hon Richard Jones (Chair)
The Hon Jan Burnswoods
The Hon Amanda Fazio
The Hon John Jobling
The Hon Malcolm Jones
The Hon Peter Primrose
The Hon John Ryan

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CHAIR: Thank you for all coming here today to the opening hearing of the inquiry into the M5 East Ventilation Stack, the third inquiry conducted by General Purpose Standing Committee No. 5 into the issue. Unlike the previous inquiries, the M5 has now been operating for almost 12 months, so there is now the chance to assess whether the concerns expressed during the earlier inquiries were valid.

I want to begin by making a short statement about security and about audiences at public hearings. Unfortunately as a result of the current world situation, particularly since the tragedy in Bali, security measures have had to be upgraded at this Parliament House and at other prominent public locations. Public hearings are affected by this, as are other activities at Parliament House. I ask you to co-operate by following any instructions given by parliamentary officers or security officers during today and Monday's hearing.

Apart from the general security issue, there are some things I need to say about the role of the audience today. When a large group attends a public hearing about an issue that vitally affects their lives it is often very hard to sit and listen quietly. However a parliamentary hearing is not like a local council meeting, where the audience sometimes makes comments and claps or interjects. In a parliamentary hearing members of the public are able to listen but not participate or interject. Order must be maintained at all times. It is important that members of the Committee can be heard and that witnesses can be heard. You also cannot directly approach the Committee members during the hearing.

To make sure that you as an audience can hear, the Parliament has hired PA equipment for this and Monday's hearing. You also have an important role to co-operate to ensure that witnesses and Committee members can be heard. If anyone interjects I will call him or her to order and they may be asked to leave. If you do not hear something of what is said it will be available in the transcript of the hearing. This transcript is usually published by the Committee and placed on its website, so you will be able to check what was said. The transcript takes some time to be prepared and checked, so it should be on our website by late next week.

Finally, during the day we will take breaks from the hearing or the Committee may need to meet in private. If that happens please follow the directions given to you by the staff, parliamentary attendants or security.

For the media present, I also remind you on behalf of the Committee that the usual broadcasting guidelines apply. Copies of this are available at the table at the door, as are copies of the terms of reference of the Inquiry. It is important that you have regard to the provision of not filming the audience during the hearing. For the rest of the audience I also need to let you know that you are not permitted to take photographs during the hearing unless the Committee has agreed to this previously.

Now I also need to announce that the Committee has decided this morning to publish submissions received to this Inquiry. Before beginning the hearing I would like to thank the many members of the community who contributed submissions to this inquiry. Within the limited time available only some of those who contributed submissions have been able to be invited to give evidence today, but thank you to all those other members of the affected communities for the assistance they have provided to this inquiry. Despite a very tight deadline for submissions of around two weeks, the Committee has received around 100 submissions, indicating a very strong level of public interest and concern about the M5.

In today's hearing we will hear from a variety of witnesses including air quality experts, the EPA and Planning NSW. At the conclusion of the inquiry the Committee will hear from representatives of the largest resident action group, called RAPS. However I wanted to start the inquiry by hearing from residents and their experience living near the M5 stack. We have residents here from Earlwood, Turrella, Bardwell Park and Kingsgrove, suburbs affected in different ways by the stack.

MARGARET ANNE GOTSIS, Home Duties, 12 Moore Street, Bardwell Park,

PETER ALBERT ANTHONY SNEPVANGERS, Quality Assurance Manager, 50 Walker Street, Turrella,

MAGDA DANCZ, Cosmetic Consultant, 23 Highland Crescent Earlwood, and

WALTER WILLIAM FORRESTER, Retired, 54 Warejee Street, Kingsgrove, sworn and examined:

CHAIR: Mrs Gotsis, in what capacity are you appearing before this Committee?

Mrs GOTSIS: A resident of Bardwell Park.

CHAIR: Are you conversant with the terms of reference of this inquiry?

Mrs GOTSIS: Yes, I am.

CHAIR: Mr Snepvangers, in what capacity are you appearing before this Committee?

Mr SNEPVANGERS: A resident affected by the stack.

CHAIR: Are you conversant with the terms of reference of this inquiry?

Mr SNEPVANGERS: Yes, I am.

CHAIR: Mrs Dancz, in what capacity do you appear before the Committee?

Mrs DANCZ: Resident.

CHAIR: Are you conversant with the terms of reference of this inquiry?

Mrs DANCZ: Yes.

CHAIR: Mr Forrester, in what capacity do you appear before this Committee?

Mr FORRESTER: Resident who has been affected by the M5 freeway.

CHAIR: Are you conversant with the terms of reference of this inquiry?

Mr FORRESTER: Yes.

CHAIR: If you should consider at any stage during your evidence that in the public interest certain documents or evidence you wish to present should be heard all seen only by the Committee, the Committee will consider your request. You might like to start by making a short statement?

Mrs GOTSIS: My name is Anne Gotsis. I have lived in Bardwell Part with my family for over 20 years. We chose this area because of its proximity to bushland and what I remember to have been relatively fresh air. It was in many ways a beautiful area 20 years ago—and it was a beautiful area on year ago as well. We live on a ridge above the Wolli Creek Valley and also above the exhaust stacks for M5 East. In the late 1980s, along with hundreds of other local people, I supported the RTA's option to build a tunnel under Wolli Creek for the proposed extension of the M5. This was to avoid the road being constructed above ground in the narrow steep section of the Wolli Creek Valley. The valley's narrowness and steepness is undisputed by those who have nearly lost control of their car has a career down the road from Earlwood to Bardwell Park Station. This strong community support was gained mainly, but not exclusively, to ensure that vehicle pollution did not build up and then hang around the valley, which we all you would cause health problems and be quite

unpleasant. To our delight the tunnel option was accepted and our beautiful valley we thought was saved. Sadly our confidence was misplaced.

Some time in the first half of the 1990's, the RTA called the community together at the Bexley North Anglican Church Hall to let us know there would be three exhaust stacks for the tunnel and I found out one was to be a block a half away from our home. As the meeting went on—even though I was concerned about the proximity of the stack—I realised that there did not seem to be any discussion about filtration. People challenged the RTA at that meeting and to our horror we found out there was no plan for filtration. I felt then, and of course still feel, that this utterly defies commonsense. What an opportunity they had with the construction of a tunnel for capturing and cleaning up emissions from at least a section of this new road. When the community had favoured the tunnel option I am sure none of us would have expected this outcome. Filtration, at least to me, was basic. I remember coming away from that meeting in absolute disbelief and I was very angry.

In 1997 or 1998 the Government announced that there would be in our only one stack and that would not be close to my home. I was very relieved that it was not going to be a block and a half away but amazingly enough, the RTA told us it would be actually in a valley—not above a valley—at quite a distance from the actual tunnel which lies under the golf course behind our house. There were still no plans for filtration and, surprisingly, this decision had been made without any environmental impact statement. However I then realised firstly, because the stack was under a kilometre away and because we were on a hill probably there would be times when the pollution would affect us when it blew up the valley—it is not very technical but I felt sure there would be times when we would suffer; and certainly friends on the ridge would suffer. Secondly—and this is one that still upsets me—students with intellectual disabilities at Cairnsfoot Special School, Loftus Street, Arncliffe, which my second daughter attended, are about two blocks away from the stack—not to mention several other schools. The inevitability of serious health impacts overtime for those playing—or existing—in the schoolyard because many of them are unable to play, particularly those with multiple disabilities, particularly those people with respiratory problems, I felt the implications for them would be a disgrace. Who knows what has happened to the lungs of some of those kids? I also know the kids spend a lot of time outside.

Later I read that experts had done testing and found that our ridge was one of the so-called hot spots in relation to the stack and that under certain wind conditions our streets would receive some of the unfiltered pollution—and what bits of it I honestly do not know—particles, gases or whatever. I knew from what I read in the St George Leader we would be adversely affected at times. However, I really expected that before the freeway actually opened it would have been realised how critically important for the local community filtration would be—not to mention the general community. I sound angry but I am actually more sad than angry. When the freeway did open I just hoped for the best—not so much for the family as a whole—although I do worry about that—but for my eldest daughter, Eleni, who often visits us. She was by then living away from home about one kilometre from the sea. She has had and still has a chronic viral illness and, even though the air in Bardwell Park had been pretty good and she loved living there, she was keen to live in the cleanest air in Sydney could offer, that is, near a beach.

Now she can only visit occasionally—and if she does she almost never stays the night—in fact never since this bad incident—and she used to often stay the night, some times for several nights. Even when living independently adult children usually enjoy visiting their families—and it is even more important when you are not well—sometimes you really need your mum. Unfortunately on several occasions this year when at home Eleni had complained that when she opened her window upstairs it was, as she put it, "like being at the rear of a car near the exhaust pipe." Anytime she has complained of the smell she has always developed a headache. One day it was so bad for about three to four hours that she became quite breathless and very distressed and I had to drive her home. On each occasion once she went back to Bronte her headaches disappeared—and on that one occasion her breathing problems stopped once well away from Bardwell Park.

As for myself, I guess I am lucky — I have not asked the doctor, I am too scared — my sense of smell is quite poor after a viral infection a year and a half ago but I still smell it occasionally but not badly — but who knows what I would smell if I could. I have smelled petrol —which cannot be accounted for just by someone starting a car and the air is not fresh — except when the wind is really blowing — but at other times it feels

quite heavy. It is an unfamiliar feel and I know that is subjective. I know enough about vehicle emissions to know that none of us should stick around Bardwell Park in the long term unless we get filtration for this stack. One of our sons has had cancer and he for one should leave very soon. We will sell up our beautiful home in a year or two. One more thing — all our family who have travelled in the tunnel, five of us at least, are very worried about the terrible smell if you open the window even a crack. Our boys cannot drive their car through — it is a bit of a bomb and it is not air-conditioned. There is no way I will let them drive in the tunnel and they do not want to either because they cannot open the windows. I avoid it at all costs especially after one incident, once I had the misfortune to enter the wrong lane at Arncliffe during peak hour and found myself heading towards the tunnel, which I had been in a few times and did not like, but this time it was 20 minutes in the tunnel and 20 minutes in the tunnel causes very sweaty palms. I recall George Thompson, our local Labor member, promising filtration. How long do we have to wait?

Mr SNEPVANGERS: My name is Peter Snepvangers. Basically, I have put a submission in and I do not really want to add too much more on that. I think you have all read that. I do just want to make a couple of small points and also add some more to my submission with some relevant health articles to do with particulate matter from very recent research in the USA.

Basically, I want to thank the Committee for forming and listening to our concerns. I do believe in the Westminster system and I think it is one of the only opportunities that community people can actually come in and voice their concern and be heard by members of Parliament, especially if a section of a political party does not want to listen to their local residents at all. I do not want to be political about this issue at all. Basically, I used to be a Labor Party voter, and I say used to be.

Ms GOTSIS: Me too.

Mr SNEPVANGERS: The only reason I have changed is because of the stack and the non-representation at every level of Parliament from the ALP.

I would like to remind the Committee that the State ALP conference of 2000 voted for filtration. Robert McLelland, the Federal member for our area, for Barton, has personally written to me, et cetera, and he said he has publicly stated he supports filtration. George Thomson, in the park at Arncliffe, said, and we have it on video, that we will filter that stack, et cetera. All of those things are public knowledge, for our area anyway. The local government areas of Canterbury, Rockdale and Marrickville have all voted for filtration.

I want to appeal to the members of this Committee to find a solution to work together. I notice a lot of committees now, if you read them, one party or the other puts a statement out at the end disagreeing with absolutely everything for some reason or other. I would really request, on behalf of the Minister for Transport, on behalf of the people affected by the transport and also basically on behalf of keeping our political system fair and honest, for people who are affected by things, to try and work together and find a solution.

Basically, for me the solution does not necessarily have to be electrostatic precipitators. I personally believe they work. I know they are installed in so many different areas. I have a paper I would like to submit as well which talks about new areas of filtration that are being used with markets of US$10 billion in retro-fitting, and the reason why that will happen. Basically it is another form of filtration.

I was on the Air Quality Community Consultative Committee when it was originally formed and I found that the most frustrating thing in my whole life because the RTA would not answer questions, would not work with the community. The community did not want any one thing; they just wanted some sort of effort made to look at filtration, not necessarily EPs, but any form of filtration, and we were continuously denied the opportunity to have that happen. It was this idea of: This is what we have got; we do not care how it happened; we are not talking to anybody; but this is what you are going to get. I resigned from that committee after a year and a half or two years of complete frustration. I have put my resignation letter in as part of the submission. It seemed to be DUAP said, "You must do this", so they formed it and then we have had X amount of meetings, so "everything is okay now", and that wasn't the case with that. Ever since I resigned from that, I have had no exit interviews to see the reasons why or whatever or is this thing working or not. I have never since seen a minute from that committee.

That committee was meant to be disseminating the information to the public. It has some interest groups on there like RAPS and people like that. That is the only avenue that the public are getting any information at all. I am not a member of RAPS. I did join at one stage. When I was on that consultative committee, I represented a group of local residents, two or three streets, Walker Street, Turella Street and Loftus Street. We had meetings in the park where the filtration, air checking monitor is, which is directly across the road from a child care centre where my daughter goes.

The other issue for me is I have a four year old daughter. I really like the area. I have lived there for a long time. I do not want to move, but I am coming to the stage where I have to sell the house or get this thing filtered, in whatever format. If people do not believe filtration works and it only works 50 percent, 50 percent of taking stuff out is going to increase my life. You are going to save money anyway, because I will not be going to St George Hospital continuously with asthma and things like that. I am a diabetic, so I have some major problems anyway. I do not want things put on our community that should not have happened anyway.

There were plenty of opportunities to do something about this for years and years and years and the opportunities that the community tried to present to everybody were denied or not looked at. I am coming to the stage where I will probably have to sell my house. My daughter plays on a trampoline in the backyard. She complains that the air tastes funny and the air smells funny, and I can smell it as well. It is a rubbery, diezel sort of smell. I do not know where it was coming from. I thought perhaps it is the airport, maybe it is the stack, I was not sure. I went out and I bought one of those rooster wind vane things and I put it on my shed. Now I know every time she complains it is coming from the north or the north west, and when I look and go up the top of Loftus Street, I can see it is coming from the stack. I know where it is coming from now. I have got to do something about it. That is why I am here. But I do ask the Committee to try and work to get a result, any result is a good result, and I would really appeal to you.

Another issue I have is disappointment with Government departments, like the EPA and the Health Department. I think they have been put in a hard position. At the same time, it is very difficult to get information out. When you ask for something, you start off with information coming in, and you ask for something relevant and it all sort of clams up, you do not get any more information, et cetera.

I have had to go to the Ombudsman's Office to get the monitoring information put onto the RTA web site because they kept on saying, "Yes, we are going to do it. Yes, we are going to do it". It was a request made by the community at the time. I can go onto the web, go to London, Belgium, any country virtually, and I can get information on cities and the pollution, et cetera, and they were giving data on an hourly basis. We just requested an average over 24 hours for particulates, and that is not too hard. The company that does the monitoring is a company called EcoTech. They installed the equipment in the monitoring station. I talked to the technician down there. He said they have information à la minute and it is sent live, but it has to be validated, et cetera. So the information was always there; it was just never going to happen.

After going to the Ombudsman's Office, I made the complaint, I said I was not going to go away, they did stuff, they talked to people, and we finally got the stuff on the web site, but you should not have to go to that extent to get something that DUAP said should happen. Why do they not just do what DUAP said? I cannot understand it.

Most of the conditions that were set, we thought, okay, these are safeguards that DUAP have done. They are the technical people; they understand what is going on. We trusted, but every one of them, not every one, but a lot of the things that were sent to us, there were 70 conditions or something, they seemed to be broken with impunity. As we go on, this becomes, "Oh, we said no but it means you can have six goes at no and then it is really no". It is just stupid.

Going out to portals and all this, when I was on the AQCCC, definitely that would not happen. That is fine, that is accepted, but now we have got another lot of people in another area, or in two areas, they are also affected, they are in the same boat as us now and they are probably getting shafted somehow as well.

I do not know what else to stay. I am sort of running out of stuff. If I move and sell, some poor bloody family will come, probably an ethnic, not well English speaking, et cetera. That is what I have found in the area. People do not understand a lot of the stuff when you have community meetings and everything when you explain what is happening, because there is nothing in the media, they are shocked. If I sell my house, that is fine, I get out, but some

poor sucker is stuck there too, and if they have got kids, it is a major, major problem. That is all.

CHAIR: Do you have a submission there you want to add to?

Mr SNEPVANGERS: Yes.

The Hon. AMANDA FAZIO: I move that we accept that paper.

Ms DANCZ: My name is Magda Dancz and I live in 23 Highland Crescent, Earlwood, with my husband Michael, and daughter, Caroline. We have lived here for 23 years, worked very hard at renovating our home and never had any intention of moving from the place we call home. But what choice do we have now? We live just 401 metres away from the stack, just outside the property buy back circle, in the ridge that faces the stack.

Since the opening in December last year, we have been constantly sick, especially myself and my daughter. We started noticing smells in January and greasy dust on our windows, everywhere in the house. I cannot leave my windows open at all most of the time. Sometimes we have woken up at night with a very bad smell like diesel and rubber burning. I have never had any problem like this before.

I have been having headaches, respiratory problems. Now I use a puffer and Panadol constantly, sometimes even Panadeine Forte when the headaches are very bad. My daughter, who is 23, also has been affected with headaches and now uses an asthma puffer for the first time in her life. I have given you the medical certificates with my submission. My husband is also coughing a lot, but does not seem to get the headaches that we get.

We tried to complain to the RTA, firstly by phone. At the weekend there was nobody to complain to, not even an answering machine. My daughter and I have spoken to the complaint officer at least six to eight times. The woman I spoke to is Janet Angel. She told us that because my daughter worked in North Sydney it was work-related, because she does quite a bit of driving as part of her work of seeing clients. They also told me that maybe the smell was from the wood fire burning, nothing to do with the stack. I could not smell the wood. It was a completely different smell, and in March or April no-one was burning wood. Once she told me it was stress related. The other time, on a Friday afternoon, when it smelt like we had a truck inside the house, my daughter could not breathe and rang to complain. Ms Angel said no-one else complained and she was not very helpful at all. I stopped ringing. To me it was a waste of time and made us very angry.

Finally, I sent Mr Faulkner, the M5 East manager, our medical certificates on 19 August 2002, asking if there is anything they can do. We have got no reply to our letter. I understand Caroline's doctor, Dr Halasz, complained to the Health Department. We have heard nothing. We even wrote to Alan Jones, but Mr Scully told him his side of the story and said there was no problem.

My daughter uses the tunnel as part of her work. I have used it two or three times. It is very hazy and smelly inside and does not seem safe for anyone breathing this dirty air.

The New South Wales Government is neglecting our health by informing us the stack is safe. Would anyone like to live near an unfiltered 35 metre chimney which lets out fumes from 80,000 cars and trucks every day? We feel we deserve a situation better than this.

We have a lovely home, but we are sick and cannot open our windows or enjoy being outside. We have to constantly clean because of the greasy dust that lands on our windows, the cars and the furniture. We worry what it is doing to our lungs.

We were hoping that my daughter would stay in the area living near to us, but now it looks like we might have to move away from the area we love so much. We fear that Mr Scully, the RTA, the Health Department and Canterbury Council do not care about the current problems and dilemma that we as Earlwood residents are facing. We need solutions to our problems to protect the residents who live near the stack and the drivers who use the tunnel. I hope that you, the Committee, will be able to feel our problems and help us to solve them so we can breathe more easily. Thank you for listening to me. I also have a couple of things to table if you want.

Documents tabled

Mr FORRESTER: These comments are from Wal Forrester whose property adjoins the freeway west of the Bexley Road tunnel portal and in respect to item 1(c) of the terms of reference. The subject is the portal emissions at the Bexley Road tunnel affecting residents and residential properties west of the portals. It has come to my attention recently the practice of emissions from the portals at Bexley Road. I understand such emissions will take place when the Turrella stack is closed. The emissions should only take place when essential, taking into account the health of residents who will be affected. It is considered that in achieving any cost saving any emissions from the tunnel portals should not result in surrounding air quality exceeding specified goals. It is understood the opportunity exists to emit at the portals either partially or fully, depending on the time of the day and the weather conditions at the time. The Princes Highway and Marsh Street ramps can comply at all times but this does not apply to the Bexley Road portals.

It is agreed there will be circumstances when portal emissions have to take place. These should be minimised in the interests of the health of residents outside the portals. It is understood that ventilation system for the tunnels should be designed to avoid air emissions through the portals as far as practical. This would include the Bexley Road portals. There will be emergency situations especially where emergency personnel are involved such as RTA staff, police, fire brigade and emissions through the portals will be used. Major maintenance periods should not be considered an emergency.

Mr Chair, that is one of my submissions, which I have only had an opportunity to look at, and the last 48 hours, including time spent yesterday at a family funeral. I have not had an opportunity to consult my neighbours in regard to this matter. I would also like now to refer to another item in which I have written a submission for consideration by this Committee in respect to the other relevant matters being item 1(f) in the business of this hearing and it affects the M5 East property value guarantee scheme. My wife and I purchased our home fifty years ago and after we had been in the home for 15 months Canterbury Council advised us they were withdrawing the certificate issued at the time of purchase and a new certificate would be issued which would change the zoning under Cumberland County Council scheme from open space to living area but: Please make inquiries to respective authorities in relation to a proposed county road. That is the first time we knew of a county road and that affected not only my wife and myself but also six neighbours and of those three neighbours are still affected.

The authority told us, the Main Roads Board and Cumberland County Council, "50 percent of your land will be required for this proposed roadway." After submissions and submissions it was reduced to 25 percent. Then four years from the time of purchase we were told the matter would be left in abeyance until such time as the proposed road would be constructed. After an advertisement in April last in relation to the extension of time for homeowners living around the stack to take further action in relation to the possible sale of their home, I put forward a thirty-page submission to Mr Scully. This is not the first. I have already had three submissions refused on various grounds. Most of the grounds were my lack of knowledge but I was able to learn quite a lot in relation to property valuation guarantees at the Committee meeting of 1 May 2001. I have a copy of the proceedings and that gave me a better understanding, so it gave me an opportunity to go and speak to Mr Scully with my correspondence.

The upshot was that Mr Scully wrote back and said, "I am unable to meet you but I am able to provide Mr Tony Stewart, Parliamentary Secretary for Roads are is prepared to meet you." I met Mr Stewart on 4 September this year and reduced our problems to the issue of property valuation guarantee scheme because these are provided in the M5 East Procedure at the present. Mr Scully wrote on 8 October that Mr Stewart had presented my case to him with a copy of my thoroughly researched and documented submission. Following a careful review of the case and although sympathetic to my situation he was unable to accede to the request to include the Warejee Street properties in the scheme, "unfortunately the properties you represented did not qualify."

A further submission was sent to Mr Scully on 12 October stating that it was understood that he had made one or two changes in regard to the original scheme as outlined on 1 January 1997, and asking him to reconsider the matter. If he has already made two changes he can make a third. I base this experience for the benefit of this inquiry. I have no input in relation to people affected by the stack but I am concerned with

respect to the situation of my wife and my neighbours who are affected. We have been through the situation where during the construction period of day, after day, after day we had noise, noise, noise. When the motorway was completed and opened on 7 December 2001 we had a nine metre noise barrier outside our back fence and that was after submissions and talking to the RTA but we got nowhere in that regard. Now we are still in a situation where there is simply no landscaping. Mr Scully has written to me—he has instructed his people to discuss this problem of landscaping. After a month I rang up and was told, "There has been no rain so we cannot help."

We still have the problem of dirt and dust and the noise of traffic from when I awake at six o'clock until all hours of the night, day after day. Instead of having what was to be a low traffic exit from the freeway to Bexley Road, two and half years after we were informed the 1996 EIS was the final answer—but the final answer became the main carriageway with traffic of 80,000 vehicles a day in effect against our back fence. I bring this to you. I am still waiting on a reply from Mr Scully. I have a letter from his Ministerial Adviser that Mr Scully has arranged matters to be examined and a response will be provided as soon as possible. That was one month ago. Mr Scully has agreed that he has been well presented with a document outlining our problems and he is sympathetic but he cannot help us. I say to the people at the stack who are affected by the 400 metre radius that you should be looking at some way in which you can get some more benefit as has been provided for the people who are property owners above the tunnel who, as far as I know, are not affected by the M5 freeway at all; or those within 100 metres of the portals at Bexley Road.

The Chief Executive Officer of the RTA said in May last year it was a Government decision not an RTA decision. I say to you people, and I say to this Committee, because of the passage of time since the ventilation stack PVG came into operation that the Minister extend the period of the revised offer for a further six months and with goodwill offer a partial amount for the allowance of the cost of relocation to be paid to owners who have sold their properties in terms of the present PVG. I suggest there should be a partial contribution to the allowance payable to those who have sold, or for those who have not sold if my submission is agreed to including the extended period of six months, those people will be given a similar benefit which I am not allowed to have at the moment, for what I call fair play and justice.

The Hon. MALCOLM JONES: Mrs Dancz, how far away from the stack you live?

Mrs DANCZ: Four hundred and one metres exactly. I sent around a map. Also we were going to buy the property in Bardwell Park but we have been told that is RTA affected and we backed out of the buy. We have never been told that Earlwood, where we bought, will be ever affected, never.

The Hon. MALCOLM JONES: Mrs Dancz and Mrs Gotsis, can you say absolutely the timing of the deterioration of health problems you mentioned coincided with the bringing online of this stack? Will you confirm that to the Committee or is their doubt about that?

Mrs GOTSIS: No, my daughter has had a chronic viral illness since she was 12, she is now 27. In relation to those days when she could smell the air smelling of petrol fumes and have headaches and on the day when she had extreme breathlessness, they are within the last year. That is all I can say. Without doubt yes those were relevant.

Mrs DANCZ: Since opening the — M5 I never ever had asthma I have to use puffer, I am constantly coughing and my daughter is using a puffer — she never ever in her life, she is 23. I did send the medical certificate as well.

The Hon. MALCOLM JONES: Medical certificate can say a number of things.

Mrs DANCZ: Yes. I have to tell you I constantly having very blurry eye is, I am having the coughing all time, constantly and we went away for the weekend to Lake Macquarie a couple of months ago and I notice I did not cough, so that must be coming from the place where I live.

Mr SNEPVANGERS: I would also like to add to my submission a group of the residence, our next-door neighbour and the lady across the street, and I can give you their names, who did go walking every

morning but since the stack has been up they have had to stop walking if the wind is blowing from the general stack area because they get watery eyes, sore throat and a funny taste in their mouth. Now they will not go out—if they go out around 7.00 or 7.30 and the winds are blowing from that area they go back inside. That is directly since the stack has been up.

(The witnesses withdrew)
(Short adjournment)

PETER RICHARD BEST, Air Quality Scientist, 65 Stephens Road, South Brisbane, affirmed and examined:

CHAIR: Are you conversant with the terms of reference of this inquiry?

Dr BEST: I am, yes.

CHAIR: If you feel at any stage during your evidence in the public interest certain evidence or documents you may wish to present should be heard or seen only by the Committee, the Committee will consider your request, but it may be overturned by a vote of the Legislative Council. Would you like to make a statement?

Dr BEST: I would. I wanted today to talk about community impacts. I have had access to monitoring as part of being on a scientific committee looking at the odour problems and how you correct for them. I would like also too to cast some discussion on possible causal factors of odour and health problems that are being experienced in the community.

I will say just a couple of general things first. Have I got any credentials as regards odour investigations? I have been involved now for at least the last 14 years on odour investigations for a number of bodies. That includes the New South Wales EPA. I helped formulate some of their recent odour guidelines, which have received very favourable press around the world. I have also worked for the South Australian EPA, looking at odour problems from sewerage treatment plants, industrial odours, many intensive agricultural sites. I dealt with air quality management in the Lower Hunter and the Gladstone recent projects. I have recently been involved in a review of Australian air quality work around Australia. I say that just so you can understand that I have talked to quite a number of people in the last few months about the various issues I will be bringing up today. As regards tunnels, I have reviewed the Cross City Tunnel very roughly for the RTA. I have looked at the Lane Cove tunnel for another local industry body. I have been involved in Brisbane looking at a tunnel and tunnels impacts for the Main Roads Department there.

From the start, I would like to say that I was very surprised that there were indeed odour impacts. I was dismayed by that. I was even more dismayed by the fact there were health impacts. It is something which I did not anticipate. It is something which surprised me and some of the things which I have struck, they really are, some of the investigations we did in response to there being fairly widespread community odour annoyance.

My aims today are to summarise those community impacts by a RAPS survey. The RAPS survey very much was an initial survey to establish the extent of the problem following very much the procedures which are set down in various EPA type papers, and I will talk later on about a very recent publication, which I refer people to, put out by the EPA in the United Kingdom. It is the most recent manual on odour and odour investigations, and it has a nice procedure there about how you actually investigate complaints. In many ways our investigation involves the first phase of those recommended studies, and I was very much hoping that the second and third stages would be taken on by other organisations because they require much more money than a local community organisation would have.

When you do get odour complaints in a community, it really does indicate that there is probably widespread odour annoyance occurring. People are fairly loath to complain, for a number of reasons. In many situations when I have dealt with odour complaints, when you start investigating fully by doing odour surveys, talking to people further, you realise that there are many more people who are feeling the effects but for various reasons will not put their names to it.

When you get around to looking at what is causing odours, it is fairly simple. We have heard some discussion this morning saying, yes, people have indeed have odour or health complaints and have noted that they are happening at a time when winds are blowing directly from the stack to the source. That can happen, but we are dealing here with a situation where the terrain around the stack is actually quite complex. I will show later on that surface wind flows do not necessarily represent where the stack plume is going. So some of those simplistic vague interpretations in looking at odour complaints need to be carefully weighed up.

I would like to talk about how can a stack impact be established. I would like to briefly mention that there are a number of studies now showing that where once it was thought you got odour complaints way before you got health complaints, there is a lot of recent evidence to show that in fact odours can trigger changes in immune systems of

people. Immune systems are hit by many things, including stress. It is very much a cycle of behaviour whereby as soon as you get impacts on immune systems, you are getting impacts on health. In fact, the World Health Organisation definition of health very much contains odour if you look at it going back 30-40 years.

I would like to review some of the data which I have had access to, to ask whether the tunnels are operating as expected and whether it has implications for some of the other studies. I would like to just talk about some of the results that have come by looking at particulate monitoring done around the stacks and in the community and say whether that can be usefully augmented to address some of the problems now being experienced in the community, and finally just to add a couple of brief comments about tunnel monitoring design.

My main conclusions to date are that there is widespread odour annoyance occurring in the local community which was noticed from January onwards, and I believe it is still continuing. The survey terminated in June. Basically, it is a very big imposition on people to keep diaries for that long, so the fact that we actually have five months of odour diaries from a number of local residents in itself is of very significant effect.

It is surprising just how many health symptoms are being reported by people, and I would appeal to the Committee and to other people and say when you get odour complaints, when you get health complaints, please take them seriously, you might not believe them, but please take them seriously. We are talking about vital issues here.

As far as I can understand at present, there has as yet been no significant odour and health investigations apart from the RAPS study yet conducted in the M5 East. I am hoping that is going to change very shortly. As far as I know, there has only been one measurement of odour levels in a tunnel ventilation stack. That was for Sydney Harbour, and I talked a bit about that last time I was here.

One of the surprising things is the stack characteristics are different from what we anticipated. This is both good and bad in terms of impacts. One of the surprising things to me was that in fact the temperature in the exhaust stack is around about eight to ten degrees Centigrade above ambient temperature. If you remember in some of the EIS studies we were talking about, it was between five degrees below and maybe two to three degrees above. So the M5 East ventilation stack and tunnel is quite different to what was anticipated. Having that extra temperature does make a big difference I believe in terms of the plume rise you might expect to get.

The bad news is that when we inspected the records we found that there were occasions, especially at night time, when the volume flows were much lower than expected and were actually below some of the values that were recommended by the RTA. That is something to be talked about by other people later on. Low volume flows mean you do not get as much as of a plume rise as you expect.

I have been asked to say also whether the stack impact is identifiable in the monitoring. We have done a limited amount of work on this. Because there are so many influences on the air quality in the region from all the other sources, the airport, other transport sources, industries, bushfires, the fact that the gross statistics looked very similar before and after the tunnel was operating does not mean to say that there was not an impact, and I intend today to show that.

Surface winds are indeed a poor indication of the plume direction. It is a shame, to my way of thinking, there was not some anemometer or other device installed, at least for a short period like one year, to actually work out what the wind directions are at the top of the stack or above so that we can actually have a good idea where the plume is going. So I believe additional stack monitoring is required.

Finally, in my conclusion, again I plead, let us have a recognition of community concerns, let us have some action. There is a large amount of Australian expertise, both in New South Wales and throughout Australia, that can be used to try and sort out what the causes are of the problems. I am not saying I know what the causes of the problems are from a straight scientific point of view, but I think they need to be taken very seriously.

You might not be able to read this but I will just relate what this is and pass a copy around later on. This is Appendix 9, "Tools for Complaint Investigation for Odour Impacts" put out by the United Kingdom EPA agency. Basically, it talks about as soon as you actually have complaints, what you are trying to do is identify the source to sources known, identify the affected area, really look at the reaction of the locals, and also see what the level of

annoyance is, and try to ascertain the pattern of exposure, look at the time and the trends, whether they relate to specific weather events or process activities. One can do various things which come under the label of simple or scoping studies and complex and more expensive studies.

The simple studies can be looking at complaint records, walking around the site and sniffing, walking around the complaint location, referring to operator process logs. If you know what the source is or if you suspect what the source is, there are simple rules of thumb that say how far away from a given source of odour you might expect to get complaints. You can add these up to see whether you can determine where the source is, in other words do forensic air quality work.

It is important to ask people to keep odour diaries, to plot complaint locations and to bring all this information together. That is the first step. Obviously, we did not have access to all operator records. All we had access to was what the local community said. We followed that first step.

If you suspect that there are odour problems, then you should really go and do more complex work. Complex work could be doing things like taking a base sample of either ambient air or stack air and looking at the composition of it, for various reasons. One is to see if there are trace compounds which might be causing problems, to get some idea how strong the odour is at the stack top, and then be able to estimate what the odour looked like in the community, to see how they stack up against normal guidelines for what causes annoyance. Annoyance is caused though by more than just what concentration the odour is. It is how often the odour that comes through, how long it lasts for, what it is associated with, do people have some idea where it comes from. You can then go on and do various devices, modelling, field observers, attitude surveys, having a population panel and having a field observer sent out specially to try and track down what is going on. That is the second stage. That is what I would hope would get done by other people in the near future.

Just briefly, this is a diagram which comes from an Irish EPA document published last year and it is reflected in the United Kingdom document. There are various Australian and German documents which did very similar things. It talks about how you go from odour formation through to complaints. It goes through the normal things. It talks about odour dispersion. It goes through exposure, detection, appraisal by the receptor, and then you go the first stages, annoyance, and then nuisance, and then complaint actions. So complaints are the end result.

Complaints and nuisance and annoyance depend very much upon receptor characteristics. There is a sensitivity factor of a hundred in a normal community. There are some people who are very sensitive to odours, the same way as some people are very sensitive to health impacts. Air quality regulations are supposed to protect sensitive people. They are not just there to protect the normal population. That is something which is in every air quality regulation around the world as far as I know. We do, if we can, test upon very sensitive people so that we know where the safe levels are. But there are many more things involved with odour. It is very much how people cope with them. How people cope with them depends upon what their interactions are with the departments and the investigating officers, so it is a complex process.

Here is a brief map showing complaint locations over a period. You can see most of those are located on the ridge top to the north and north west of the stack. I also show here that there are complaints that happen around the monitoring locations of U and X. So we are talking here about a highly localised problem, which would suggest we look at reasons why it is a highly localised problem.

The Hon. JOHN RYAN: Those letters around your sites, they help you identify who made the complaint, do they?

Dr BEST: Yes. In the report which I will submit later on you will see that they are referring to addresses, so you can actually identify, not names, just simply by the letters.

The odour diaries were very much set up as an initial response to the January reports from local residents. We set up that diary and the diary was structured, it was fairly normal. We collected that information. Obviously we needed a decent amount of information to get some statistics and to get some idea of what is going on. That data is collected People were asked to say where they smelt the odour, at what time, how long it lasted for, what they felt the odour actually smelt like. It also asked what people's reactions were to it, did they later on have to take any extra

medication. All that information is together in a spreadsheet, a copy of which is available, and it has been made available to the Health Department.

In summary, the odour characteristics from everybody did suggest the traffic origin. We were getting comments like rubbery smells, petrol smells, diesel smells, dusty sort of nature. Most of the comments that were made, most of the episodes seemed to occur in light wind conditions. That is important for us to know how we can track down where the odours come from. The health responses seemed to be in people not previously known to be sensitive to air quality, and there certainly seemed to be significant impacts on lifestyle. In summary, from preliminary investigation, my point of view is, yes, there is significant odour and annoyance occurring and also health impacts and these need much fuller investigation of what is going on.

Here is a summary of the statistics that are in the report. Here are the number of complaints by the hour of the day. The greatest number of complaints is in the morning and around about eight, nine o'clock, which coincides with normal rush hour traffic. There are complaints also in the evening, a surprising number of complaints quite late into the day.

The Hon. JOHN JOBLING: Dr Best, is there any particular reason on that last slide why there is such a high spike rate in the morning? With the same sort of number of travellers in the afternoon, why are the spikes not as high as that? Is there some reason?

Dr BEST: We are talking here about a very special location, so you need the wind direction being right to actually get the winds going towards the ridge. In the afternoon peak hour in Sydney, on many days you are talking about a northerly sea breeze that comes through, which will tend to take the stack in a totally different direction away from the ridge. So it is very much a function of meteorological conditions.

The Hon. MALCOLM JONES: Whom were the complaints made to?

Dr BEST: Observations were made by residents and noted in an odour diary. In some episodes a complaint was made to the EPA but when I talk about complaints on the slides I am talking about observations in the diaries of people who say they had severe annoyance.

The Hon AMANDA FAZIO: Does the report you are going to give us outline the methodology of the diary system and how the diary system was conducted?

Dr BEST: It has details of what the diary actually was. In terms of overall methodology if you compare what we did with what the UK Environmental Agency recommended recently for the form of their diaries it is very similar. It is the sort of thing we do for an initial investigation. If you are asking me: Did we have a control group? No.

The Hon. AMANDA FAZIO: I was not asking that but for us to put that information in context later I wanted to make sure that was available.

CHAIR: Is it possible to table the document by way of motion?

The Hon. AMANDA FAZIO: I move that we do.

(The Hon. Amanda Fazio moved a motion to table: Report from Katestone Environmental to Residents Against Pollution Stacks Incorporated—Summary of Complaint Log Information for the period from 24/1/02 to 30/6/02 for Earlwood and Turrella Residents—August 2002. Agreed.)

Dr BEST: It is a standard form. We then had someone independent of me go through those items, put them onto a spreadsheet and I have printed out the spreadsheet as appendix 2 in the report. You can see there we were after the date, time noticed, duration, strength of odour, description of odour, symptoms, treatment required, and any comments; and then we added wind speed, wind direction and characteristics of stacks. We tried to look overall. You will see some of the symptoms we are talking about, irritation of the throat, mucus, itchy eyes, wheezing and general asthmatic responses. These are all very common responses you get from

people having odour problems. None of those is unusual. If anyone was given those symptoms probably the first thing they would think is that people were being exposed to odour of a fairly decent concentration.

The Hon. MALCOLM JONES: Who commissioned you to prepare the spreadsheet?

Dr BEST: RAPS.

The Hon. MALCOLM JONES: It was given to NSW Health. What was their response to the spreadsheet?

Dr BEST: I only had one inquiry to me personally about the spreadsheet by Dr Vicki Shepherd.

CHAIR: Can we leave questions until after the presentation?

Dr BEST: I ended up concluding there was indeed odour annoyance. The first thing we have to look at is: I have no documentation about odour levels beforehand but people were not complaining. On the assumption something has changed, what has changed? The most obvious thing is the tunnel started operation in December 2002. We need to look at other things too. It is interesting that fuel specifications in New South Wales changed in January 2002, which very much is a response to the phasing out of leaded petrol. That involved various additives, oxygenating agents. I believe one was MMT and most companies were using MMT. We were concerned, as MMT is known in the past to have had fairly decent symptoms when used in Canada and some parts of the United States. Some symptoms are very similar to here. I have not been able to get more information. It is a compound, which has manganese, which can be quite toxic in small quantities. It is something I need to look at.

We have to construct a hypothesis about why we get that response to the additive here rather than elsewhere. They are things we need to canvass. There could be new industries in the area. I have not had the chance to look and see but usually when odour responses come through the first thing I do is to think there are problems with the sewerage treatment network, the pump stations which are throughout the community. I have had a look around the community, there are pump stations and I went to one and could not see problems but it is something that needs investigating. Finally the other thing which can happen which complicates things, is you do get changes in community expectations which brings what might be a low level odour annoyance into a fairly major odour annoyance. I have been involved in several cases where there have been changes in a given area due to an industry, which raised people's worry about what is going on. As soon as you do that you are likely to have people sensitised. It is something you need to be conscious of.

Is the tunnel exhaust operating as expected? If it is the tunnel, what is different? Why are we getting things we were not expecting? The tunnel seems to be very successful in terms of attracting traffic. There is fairly poor in-tunnel air quality. I am surprised there are many hours where carbon monoxide levels are over 60ppm. That is not the way to design an installation. We have low flow rates which I have noted in February to May night times. The stack temperature is much higher than we anticipated, which has ramifications. For any future tunnels that are being considered in Sydney at the moment you have to ask: Do you expect to get the same thing there because it is important to the evaluation. It is a technical point but extremely important to both sides.

We do not have measurements of the particulate composition of the exhaust, the chemical composition. We do not know there are trace compounds, which can be a problem. Diesel vehicles put out a wide variety of compounds. Researchers around the world are continuing to find more and more toxic compounds, cancer-forming compounds in diesel exhaust. If 20 percent of the tunnel traffic use diesel, it is something that needs to be looked at. We have to say the tunnel is different; we would like to know why. We do not have enough information yet to say the tunnel emissions are properly characterised. It would be a simple matter, I hope the RTA have done it but not told me about it, doing odour measurements. If we have odour measurements we can relate emissions to response.

These are fairly technical slides. I was trying to show we can look at overall statistics but they do not tell us very much. It is much better to say: Let us divide Sydney days into ten different types of weather—it is

very easy to do that—then we can analyse measurements before and after the tunnel has been operating to see the variation in time of pollutant levels on those types of days. Then we can start saying: Are there any significant differences? They might not be very big but they can tell you there are changes, which with more analysis could be ascribed to stack operations. That slide looks at the variation of carbon monoxide; the diamonds are what happened before, the squares are what happened after. It is quite complicated. There are sometimes when things are better. At this site in the morning from 6 to 7 the pre-levels were higher than the post levels. Later on in the evening the post levels are about twice the pre-levels. We are talking about average levels on all days of this type.

The star I have there indicates the wind for those days and that the plume might be expected to go from the stack through to the monitoring location. I can show you another type, different pollutants, different synoptic type. There are locations where in that period five to ten in the morning the nitrogen dioxide levels are an extra 10 to 15 percent on average. This slide is looking at the statistics; these are box-whisker plots and not only tell you about the average values as well as the fifth and ninth percentiles, maximum and minimum. It is quite complex. This I believe is before the tunnel. Look at the bottom line; they are pretty close to zero at the hour of the day. I show you the next diagram taken afterwards, look at the bottom, you can see the minimum values, especially early in the morning have been raised. There are clear, identifiable changes in the air quality when you look carefully which would lead me to suspect: Yes the stack impact is there.

There have not been certain major events. Why am I concerned about stack impacts? Stack monitoring and the ambient monitoring is only looking at carbon monoxide, PM10 and nitrogen dioxide. If there are other compounds, especially at trace levels which can cause problems in sensitive people the fact that national guidelines are not exceeded does not mean there are not going to be health impacts; does not mean there are not going to be severe problems with amenity. How do we seek causal links? I have talked about the standard techniques. We follow the United Kingdom Environment Authority. We carry out complex investigations. The first thing we want to do when we know the time of the complaint and where it is, if we know what the meteorology we can backtrack to find where the emissions might have come from. We can determine the odour particulate and chemical characteristics of potential sources and if we could do measurements at the site we could establish a direct link. We could estimate impact contributions to the residents for a representative set of complaints. I am not talking about a minor job it is a medium sized job but it can be done because it has been done elsewhere. If we are concerned there is a big problem we could put something into the plume and measure it with sensitive instrumentation downstream. It is possible to confirm links. We would want to check out community sensitivities and compare it to other areas in Sydney and see whether the community here for one reason or another has different characteristics to the rest of Sydney. This has been done in other States. I believe you are going to have submissions from Dr Morawshe and Professor Moore, from the same city as I come from, who have investigated odour and health complaints around an oil-shale processing plant in Gladstone where the EPA could not understand why people were complaining. I think the studies are showing that things that were not being measured are actually causing the problems, but I will leave it for them to talk about that.

Are surface winds useful to track the ventilation plume? The diagram here is plotting here the wind direction at the T1 site, Thompson Street on the vertical axis against wind direction measured at Mascot. Mascot Airport is a flat site, low terrain around it and you would expect surface winds would represent what is going on in the atmosphere up to maybe a few hundred metres. When that wind comes in and meets the Turrella Valley and sees all that terrain it is going to get deviated by the terrain. If you had good correlations, you have al the data being punched along a diagonal line, the wind direction, for instance you would look at 100 degrees for Mascot there—there is a bunch of dots at around 100 degrees for the Thompson Road site. There is also a whole lot of dots around wind direction of 270 degrees.

On the top of this diagram it is saying that when Mascot winds are south or south easterly you can have the winds just going up or down the valley, east or westwards. Surface winds do not tell you necessarily where things came from. As soon as you have got complex terrain, you have to do much more work to be assured. So simplistic explanations for complaints do not wash.

What could trigger the reported symptoms? There is a wide variety of things it could be. It could be very volatile organic compounds. It is known that they can affect health sensitive people. It could be trace air toxics. It

could be the very fine particulates, those of less than one micron or two and a half microns, which are now known to cause most problems rather than the PM10. You can actually measure that easily. It could be a mix of pollutants.

I note that the National Environment Protection measures only deal with single pollutants. They are very much a first step. We know from a variety of studies that mixtures of pollutants can cause more than additive effects. It may be 10 years before we get around to legislate that, but just because air quality guidelines are met does not mean to say that people who are pollution sensitive are not being affected. I cannot say that strongly enough.

Finally, community stress and conflict does change the way people's bodies react. According to the literature now, the impacts of stress on veterans of the Vietnam War and the Gulf War, anybody in a shock situation, it can be significant. It is not something you can dismiss. It is a real effect.

What analyses should be done? I believe that immediate odour sampling, particle sizing, and maybe chemical analysis probably will get done down the track. There have been some problems with the particle sizing. That is a long standing situation, but odour analysis and chemical analysis is very easy to do. In our profession we do it all the time. It is not that expensive. I think it would be a good idea to source equipment for a short time so we can indeed check to see how plume direction ties up with surface wind directions. I think it is quite possible, based upon experiments - I have talked to people about what was done recently in Gladstone, to be able to identify source by size distribution, looking at the ultra fine to the fine composition of how many particles there are and the size ranges. You can get instrumentation which is very sensitive and which can be run on a continuous basis. You can actually look at the characteristics or the VOC profile and establish a linkage between the source and what happens at the ambient monitoring, then you have got quite strong evidence there is a causal association.

Finally, I think it behoves all scientists to come up with testable hypotheses. There is a lot of work being done in the United States where people are going to things like intersections and traffic hotspots, doing measurements and doing health surveys, and trying to see what inferences there might be for making hypotheses. It might be the health of pregnant mothers which is affected. That is now being tested. There is now quite sophisticated medical technology to look at the change in people's immune systems. That costs a lot of money, but that is being done elsewhere around the world.

Recent evidence shows that fine particles are the key to many health symptoms, there are linkages between traffic pollution and health, but in fact it is not just meeting guidelines; it is looking at exposure histories of people. It could be in fact that persistence of pollution at half guideline levels could be more important than short episodes. Several studies have just been published, one in Darwin, looking at bush fire incidences on health, showing that people there are showing asthmatic impacts at levels maybe 60 percent of NEPM guidelines. There are indeed strong linkages between odour and health and it really is, to my mind, irresponsible to dismiss complaints without a full evaluation.

CHAIR: Do you have a copy of that paper?

Dr BEST: Yes, I have a copy of that paper here. I should mention too that we have had some good scientific co-operation on the committee that I sit on and copies of those papers have been provided to people, as has a very nice report which has been done recently by Dr Morawshe for the World Health Organisation, looking at the impacts of particulates, especially in terms of traffic impacts. So yes, those papers I will pass over.

(The Hon. Amanda Fazio moved a motion to table: Study on Bush Fire Incidences on Health and Report by Dr Morowski for the World Health Organisation. Agreed.)

Dr BEST: I will skip the next one and go straight to the implications throughout the tunnels.

The Hon. JOHN RYAN: What does the acronym TEOM stand for?

Dr BEST: Tapered element oscillating microbalance. It is a weighing device.

If you do not mind me going slightly outside maybe what I was going to first to talk about to look at other tunnels, I would very much say that what you are deliberating here today has ramifications throughout the country. In

my own city there is the major tunnel being proposed underneath the city where ventilation stacks are being used in a fairly complex environment. So whatever is being produced here I think has international as well as national significance.

Throughout the tunnels we have to ask: What are the stack temperatures going to be? Are we going to have buoyant plumes or are we going to have plumes which maybe dribble out of the stack or cause problems? When does that cause problems? It causes problems when you have got stacks in environments where people live at around about the same levels as the stack top or higher. For instance, on the Cross City Tunnel we have a lot of highrise buildings. It is important to look at those. It is important to establish the causal agents because then you have a chance of knowing where to put money in controls or to take other actions. I think health impact assessments are essential. There was a risk assessment done of the Cross City Tunnel eventually. I think that should be a standard thing. We have to ask if there are alternative to stacks to ventilate emissions from tunnels in strict urban environments. We have to ask, I think, whether it is not possible to at least trial some filtration in some parts of one tunnel so that we can get some idea of what the practical problems are with it, and then having done that, it may not be too successful, we might have a look at how we can restrict vehicle usage or report upon problem vehicles to make sure that they do not go into situations where we have traffic hotspots.

The Hon. AMANDA FAZIO: Dr Best, when you were showing the slide that was headed "Potential causal factors - what has changed", you mentioned the change to the fuel specification and you mentioned a new seal additive which includes magnesium, called I think MMT. What does MMT stand for?

Dr BEST: I hoped you were not going to ask me. It is something like manganese - I cannot remember. Anyway, it is a manganese compound. Again, if you look on the web addresses there is quite a lot of information, not only on what its characteristics are, but the problems there have been in some installations with it.

The Hon. AMANDA FAZIO: Has that been added to all fuels or only to lead replacement?

Dr BEST: Only to lead replacement, so it is a small proportion of the fleet. It is a change. I do not know how significant it is. I have asked the person who is doing long-term monitoring of manganese in the Mascot area to have a look at the impacts. He had already, but when I saw it in August it was not very conclusive. So I would have to say there is no observation for it in Mascot itself but around here I do not know.

The Hon. MALCOLM JONES: Dr Best, would you consider it to be highly toxic?

Dr BEST: There is debate upon that. I believe that when it came around to talking about additives, a lot of the oil companies were very reticent to actually use MMT as an additive because of the problems there have been in the past, but again if you look on the web, you will see there are great disputes in the States as to whether that has really been fully established. But there certainly were people who were quite strongly affected after the introduction of MMT. We need to have a wide range of scenario analyses in saying what has changed.

CHAIR: You mentioned that what is causing problems may not be being measured. Do you have any idea what sort of substances there may be, like formaldehyde or benzene, or can you hazard a guess?

Dr BEST: Possibly not. I think what you will end up finding or a reasonable hypothesis is that it probably is the very fine particles on which a wide variety of compounds can actually condense. So it might be a combination of having, if you like, a factor which gets stuff down into your lungs and that is the ultra fine particles combined with some of the compounds that get found in vehicles. So it might not be a simple matter of one substance; you need to have several things happening.

CHAIR: You mentioned about community stress and conflict having an impact. Is that quantifiable?

Dr BEST: Yes, there have been a number of studies done, both in Europe in the early 90s and in the States in about the mid 90s. It has mainly been done in terms of what happens around feedlots, piggeries. That is where you mainly see it. There actually has been a major survey done by the United States EPA looking at the tie-up between health impacts and odour. That literature is readily available. There is still great debate about it but it appears to be taken very seriously now by several jurisdictions. Odours just are not simple things; they do affect some people quite

dramatically.

CHAIR: The RTA provided us with a chart to show that there has not been a significant decrease in PM10s and so on according to their monitoring stations, although it may have been in unusual circumstances, and yet we have large numbers of people complaining about health impacts. Clearly something is going wrong. They say there is no need to filter because nothing has changed very much. Would you care to comment on that at all?

Dr BEST: I think the medical fraternity I have talked to, especially recently, say that with PM10 it is not a bad overall indicator; when it comes around to health impacts, PM2.5 will be coming in within the next three years. It has been a standard indicator. I am sure we will go over it if we use that much more. But I suspect it is even finer particles.

Again, there are several groups in the world now, in Australia there are two groups, there are groups in Sweden, Norway, there are groups on both sides of the United States, very much saying let us go and measure the very fine particles and then try and tie those up to medical impacts, because there are much better medical hypotheses about how people get affected, which relies upon the fine particles as the ones that can get right down deep into your lung, they can cause very rapid responses. So the responses are not so much about 24 hour levels. There are some studies, not that many yet, but they are beginning to suggest that even short term exposures might be the problem.

Odours are interesting because odour impacts basically have a fluctuating sort of level of pollutants. What people notice most is the fluctuations. You can have a high background of odours due to other types of sources. If you add on an odour which is offensive, which gives rise to fluctuating levels over all odour levels, people do notice that, they do become annoyed about it. It is the change aspect all over again. That is certainly the case for odour. Whether that is the case for health, I do not know.

CHAIR: What about the in-tunnel situation, because we apparently have levels of particulate matter, PM10s at least, in the region of 1,500 per cubic metre. If you extrapolate that over a person going in the tunnel for five minutes one way then five minutes the other way, there would be a significant increase in their daily intake of PMs. Do you have any information on what is happening inside the tunnel, apart from what is happening around the outside?

Dr BEST: I have not actually done a detailed study of it. It depends very much on what you take as being typical exposures of people, how long they are going to be in the tunnel, what happens elsewhere. There are many studies being done now to say that the most important thing really is people's overall exposure profile. Certainly, there is a belief that exposures at quite high levels would be significant, but I have not got anything quantitative on that.

The Hon. JOHN JOBLING: Dr Best, the modelling, as I understand it, was originally done on about 70,000 to 72,000 vehicles a day. The factual figures are at about 82,000 to a maximum of 92,000. With that very substantial increase, would you care to comment on how this would distort or affect the modelling figures that have been produced in the original submissions?

Dr BEST: Ambient concentrations are directly proportionate to emissions. Emissions generally are thought to be proportional to the number of vehicles using the tunnel. There are a lot of assumptions in that. It can well be that if you have got more vehicles using a tunnel causing congestion because of various reasons, then the relationship might not be a linear one. In other words, you could get maybe 10 percent increase in traffic, which might cause a 30 percent increase in emissions. I have not done the sums. I think other people have. That is a real problem, especially when you get in a congested network such as you have in major cities, but traffic emissions are not that easy sometimes to estimate. It does not take very much, particularly if you get significant increases.

The Hon. JOHN JOBLING: Could this then be in some way dealt with as a causal effect of the gas emission temperatures that are being found in the eight to ten degrees or maybe higher at the point of exit from the stack, and what effect is this going to have on the extraction velocity that is being applied to remove the emissions from the particular tunnel?

Dr BEST: The exit temperatures could be due to various things such as the fact we have very well

insulated ventilation in the tunnel. We have not maybe had experience with sandstone-encased tunnels before. That would surprise me. It could be the ventilation rates are so high that we are getting heat input from the fans; the greater number of vehicles could well be a contributing factor. I have asked that question of engineers and have not received an answer. It is not my expertise but needs to get looked at.

The Hon. JOHN JOBLING: If there is a higher extraction wind velocity to take emission gases out of the stack for whatever reason at increased temperatures, it is a reasonable assumption they will rise to a greater height and the plume strike might vary and you may get a much greater area and some very strange or surprising results?

Dr BEST: I think you are saying with greater ventilation rates, greater temperatures, the plume will come further downstream or will pick out terrain features which are further downstream and may be a bit higher. That is possible. The modeling of this is quite difficult, you need to be able to represent terrain at very fine scales, you need to be able to get all the input information from the tunnel exhaust, you need a decent way of describing what goes on. Whilst we have tried briefly to look at using a more sophisticated model the terrain information we had was not enough to be able to work out this. It is something limited to modeling but as we have suggested to the RTA and others it is some work that needs to get done.

The Hon. JOHN JOBLING: When the agreement was reached that certain exceedances were to be reported, am I correct in thinking they are being done on an average, 24-hour type basis? In other words you may have a marked number of exceedances, whether it is NOx, CO or whatever volatile chemicals are coming out, you may have six, eight, ten exceedances in a 24-hour period but the average over the period may bring it down below the exceedance limit?

Dr BEST: I think the information I have received has been reported correctly in terms of people realise that the averaging time is important. One of the problems with looking at the particulate measurements especially with which the TEOM has been concerned is whether or not the PM's themselves give true indicators. One of the slides shows we have a good year's worth of information which shows the monitoring of particulates in the area is being done well, the correction factors are of the order of four or five percent on an average basis. It can vary from day-to-day. There might be some days when there is 20 percent variation. We are still collecting more information but in terms of looking at exceedances of particulate guidelines I think we need more work. It is something, which in three or four month's time we may be able to come back and say more definitively.

I think you have to be careful about taking straight averages out from the reports and saying: No exceedances on the measurements therefore there will not have been in reality exceedances of PM10 guidelines, then ascribing any exceedances like that to different sources is complex. We need to say: What is important? The Darwin study is interesting because it shows as soon as you get well-measured PM10 levels going over 35 micrograms per cubic meter over a 24-hour average you are talking about sensitive people being affected; you do not have to wait to get up to fifty. Guidelines and guideline exceedances is all very well and it is a good way to be able to monitor things but the important thing is health impacts. We have to look at the studies carefully and say: What do we believe is likely to happen to very sensitive people? If we are not careful we are going to miss or not deal properly with a decent, may be ten percent of population size.

The Hon. JOHN RYAN: You have referred to the complexity in measuring. If I could put to you some conclusions from the Holmes Air Sciences Study? Are you familiar with the Holmes Air Sciences Study in your work for RAPS?

Dr BEST: I have seen one report, yes.

The Hon. JOHN RYAN: The conclusions given to the Committee, from the RTA submission pages 14 and 15, were:

> When affects of bushfires are removed from the data the Earlwood reference data suggests the air quality in the period December 2000 to April 2001 was similar in the period December 2001 to April 2002.

Would you agree or disagree with that conclusion?

Dr BEST: I think gross characteristics, yes.

The Hon. JOHN RYAN:

Since the opening of the tunnel there has been a reduction in nitrogen oxide concentrations in winds from the northwest, which is possibly associated with lower trunk traffic on service roads located to the northwest of the monitors.

Would you agree or disagree with that conclusion?

Dr BEST: I think the jury is out.

The Hon. JOHN RYAN:

Other pollutants show very little change between the pre and post tunnel periods. Some concentrations have decreased by small amounts and others have increased marginally.

Dr BEST: I think Dr Holmes has looked at mean values, annual average values and the cumulative distributions. That is good first a step; I was trying to say: Let us have a look at things on different day types; that is the next level of analysis. Are there effects due to the stack that are discernable on the data? Yes there are. Are they significant? That depends on whether or not we are measuring the things that can actually affect people's health and odour environment.

The Hon. JOHN RYAN:

The measured concentrations show that whatever contribution the ventilation stack emissions make to ambient concentrations of CO, PM10, nitrogen dioxide or nitrogen oxide at the monitoring sites, these are well below the level of pollutants from other sources and far too small to be identified in existing background levels.

Dr BEST: That I think is difficult from a first look to identify. I do not know whether that is necessarily the case it is not possible to identify. The first point really says: I think the analyses have been done against guidelines, 8-hourly guidelines, 24-hourly guidelines. When you look there it is difficult to see sometimes. The question of whether or not there are stack impacts and the significance of them is something I think we need discuss further.

The Hon. JOHN RYAN:

Short-term concentrations, 15 minute averages of nitrogen dioxide and PM10 have not changed significantly since the M5 East tunnel opened but there has been some reduction in nitrogen oxide and carbon monoxide concentrations at site T1 since the tunnel opened and some reduction of nitrogen oxide concentrations at site U1.

Dr BEST: I have looked at the same things, I do not dispute the way Dr Holmes analyses data, it is a question of what measures you look at. One of the things we are hoping to do jointly over the next three months is to go back and look at a wide number of the episodes which we think are ascribable and we will be able to report back to the RTA and RAPS various things like what you can actually conclude about the stack impact; and what correction factors you would expect on those days. I hope in four months time we may be able to see things more definitively.

The Hon. JOHN RYAN: Earlier in your comments you referred to sensitivities of people to PM10 when it reached 35 micrograms per cubic metre. That is a standard less than required by Planning NSW?

Dr BEST: Yes.

The Hon. JOHN RYAN: Are you arguing the standard is inappropriate or needs to be changed? That seems to be an argument the standard is inappropriate not that the standard has not been breached.

Dr BEST: I know it is understandable but in many ways people concentrate too much on standards. Standards will change over time. Generally the air quality standards which have been in Australia have a done

a fairly good job. We are beginning to realise there are parts of the community who are not protected by those; indeed I know from my own experience when it comes to ozone, asthmatics in Brisbane, they start responding to ozone levels of half NEPM guidelines. How serious that is has not been followed up. There have been health studies that have found measurable impacts upon various health indicators even though pollution levels have not gone over standards. Standards are very much a rough tool to give a guide and not something that are God given. One of the problems we have now is whether or not in Australia over the next five years we keep on saying there are thresholds above which you get no effects. Increasingly there is evidence to show that might not be the case especially for particulate matter; and again it might be exposure history of people which is important. I implore people not to keep comparing things to guidelines. Guideline exceedances are a good first indicator but not conclusive that people do not suffer problems.

The Hon. JOHN RYAN: Referring to in-tunnel issues, the standard being used by Planning NSW and the RTA refers to a World Health Organisation guideline for fifteen minutes exposure to carbon monoxide at 87 ppm. Is that an appropriate standard? Should there be other considerations for air quality standards for in-tunnel situations?

Dr BEST: It is not my expertise to comment on that other than to say there are other guidelines; there is a 30-minute guideline of 30 ppm. I think you need to look more at the exposures to the mix of pollutants before you can establish the health impacts for people within the tunnel.

(The witness withdrew)

NOEL GEORGE CHILD, Consulting Engineer, Child & Associates, 22 Britannia Road, Castle Hill, sworn and examined:

CHAIR: In what capacity are you appearing before the Committee?

Mr CHILD: I am appearing in a private capacity.

CHAIR: Are you conversant with the terms of reference of this inquiry?

Mr CHILD: I am.

CHAIR: If you should consider at any stage during your evidence that in the public interest certain evidence you may wish to present should be heard or seen by the Committee, the Committee would be willing to consider your request but it may be overturned by a vote of the Legislative Council. Would you like to make a statement?

Mr CHILD: I understand that. I do not envisage that for anything I would say I would seek any remedy in that regard, it is quite open. The most sensible opening statement, because I intend to speak from the submission rather than from overheads or slides, would be for me to give a brief summary of what is in my submission then allow questions.

I have provided, which I will not repeat here, some background so if the submission were to be read in a stand-alone sense it would make sense to those not close to all of the issues we are dealing with. I think most people in this room, and certainly the people on the Committee, are familiar with it, so I will not waste time with a repeat of the background to where we are today. I will move to the issues that I believe have some relevance to the matters under consideration, and they are a very brief restatement of matters relating to air quality and health, although we have just heard quite extensive information in that regard. I want to talk briefly - and these are my views, of course, based on the information available to me - about the air quality situation that appears to exist external to the tunnel 12 months on from opening; air quality within the tunnel itself; briefly about treatment options, where I have done some work recently in terms of what options may or may not be available; briefly about the question of managing air impacts from motor vehicles generally, because I think it is relevant to all of the above and the issues before us; briefly about the implications of what might be learned from the M5 experience for future road tunnels, particularly on the immediate agenda, and some brief suggestions as to perhaps a way forward in some of these matters.

Very briefly, in terms of air quality and health, I simply believe at the outset it is very important to reiterate and restate the increasing emphasis and the increasing evidence that demonstrates, I think beyond question of speculation to a matter of absolute fact, that elevated levels of various pollutants in the air are injurious and harmful to human health. I did hear the final part of Dr Best's presentation and certainly the extent to which we understand that is developing continuously. I might say though that many of the comments I will make will be related to statutory guidelines and limits, because in a sense, and not discounting at all what Dr Best has said, in a design sense and a planning sense one has to work with those figures, but I would simply restate at the outset the great importance I think we should as a community place on air quality issues, and I put that as a given.

I would like to talk briefly about the matter of air quality external to the tunnel, and I put in my submission the view based on the information available to me, and measured in terms of the formal statutory criteria, that the stack in my view does not appear to have contributed significantly to an increase in background air quality. I put the caveat on that that that assumes the representative nature of the data, and I have no reason to doubt that, although I have not been associated with the gathering of the data, and I acknowledge again the fact that there is an argument, and I am well aware of it, that some people very properly say, notwithstanding that apparent outcome, that they are suffering effects in the vicinity of the tunnel, and I acknowledge the comments that Dr Best made that there may be reasons for that beyond the scope and outside of the context of what we call the statutory limits on conventional pollutants.

In terms of air quality within the tunnel, I think that there is a different situation. I believe within the tunnel we have indications of a situation, reasonably clear indications, if not repeated statutory breaches, that the ventilation system as it stands within the tunnel is under sufficient stress that there are, if not breaches, near misses in terms of

the benchmark pollutant carbon monoxide, on more occasions, it would seem to me, than one would like to see.

I put a degree of detail in my submission, but by way of summary and in the interests of brevity, I believe we have touched on the reasons for that in some earlier comment. I think the tunnel in a sense is a victim of its own success, in that it has opened with substantially higher traffic volumes than were projected and for which the system was designed, and it has brought with those higher traffic volumes the characteristics of today's engines and today's fuels. I think there was an assumption initially that, as traffic volumes ramped up with time, some credits would accrue as fuels became cleaner and engines became more efficient. I suppose to paraphrase Jack Nicholson's book, it is as bad as it gets at the moment. There would be an argument that the tunnel was opened with 2012 traffic levels and 2002 fuel and engine quality considerations. What I say is not by way of overt criticism of those who designed the tunnel, but I think it reflects a reality that air quality within the tunnel does present a problem.

I think the issue there relates very much to the single stack model. It is interesting that at the outset the concern, and this is the third inquiry of this nature and I did appear before the first one, there was I think an understandable focus on what might occur external to the tunnel. I think there was a feeling, however accurately placed, that the position of a large ventilation stack would have impacts on local communities, an understandable feeling.

The evidence notwithstanding, allowing the question of subtleties in terms of the flue measurements if you like, the standard regulatory measurements, suggest that the stack has not had that impact. I think there were some modifications to the design and operation of the stack that may have assisted in that regard. But what does appear to be happening within the tunnel is that there seems to be a difficulty, or a near difficulty, in reaching benchmark levels of carbon monoxide and I suspect that that is because the tunnel design, which I think introduced the single stack model in an attempt to deliver a traffic outcome and find some solution to competing controversies about how this thing should be designed, in simple terms the tunnel as it stands calls for the air to be literally turned around at one of the two parallel tunnel tubes and redirected down the other. That is a high energy option, a high demand option, and I would simply say, and I will return to it a little later, that I am sure if those designing the tunnel had their druthers, they would design it, and I think this has implications for future tunnels, such that each of those two tunnel tubes was in the most efficient way possible longitudinally ventilated through the separate stack. We all understand the reasons for the single stack, but I might say also, and I will revisit it, that all of the concerns that were expressed by Dr Best in terms of the uncertainties of air quality it seems to me would benefit from the maximum dispersion and spread of these matters.

I want to speak briefly, and I will come back of course by way of questions to any of those matters, to the very important issue I think of what treatment options exist, because there has been a view I think that there is a simple, if you like, treatment fix that could be fitted, say, for example, in the case of external air quality difficulties to the stack that would resolve it. It would be a simply a matter of money. Then I think there is an important need to consider what we might be able to do inside the tunnel. I have recently done some work on that, and that certainly does not say it is the be all and end all, but I put my observations and findings in good faith before the Committee for what they are worth.

There is a technology we know called electrostatic precipitators that is used in industrial applications and in some road tunnel applications around the world to remove particulate matter. That technology is significantly used in tunnels in Japan, for example, and has been trialled extensively in tunnels in Scandinavia, in Norway in particular. It is my view that the demonstration of outcomes from that technology is that it is more effective in respect of the courser end of the particulate scale, that is the particulates above PM1.5, 1.5 millionths of a metre in diameter. With the conventional PM10 mix you can get some good results. You can get some very poor results if you get the wrong equipment, and that goes with anything, but there is a way that courser particulates can be attacked. The effectiveness, in my view, of electrostatic precipitators in removing the very fine particles, which are increasingly the subject of concern in respect of health, I think is yet to be demonstrated, but the technology is under constant evolution, so I believe that one should allow for an improvement in technology.

The important thing I think to note is that the technology available for the removal of other pollutant gasses, nitrogen dioxide, hydrocarbons, benzene and so on, is more difficult, and in my view there is very little technology available to assist us in removing a gas like carbon monoxide. The difficulty I have found in the work I have done with the removal of gases such as nitrogen dioxide and hydrocarbons and so on, which may include conventional

pollutants and some of the pollutants in the odour chemicals to which Dr Best referred, is that there are bio processes that enable you to remove these chemicals by basically percolating the air from the tunnel through some sort of media in aqueous situations containing a bio-organism that can remove those chemicals quite effectively, a similar process to running surface water through a reed bed prior to discharge into a river, a wetland situation. It can be quite effective. The difficulty I find with tunnels though is that the very low flow rates that are required to make that sort of mechanism work are in conflict with the requirement currently that you have got to push the air quickly, and I think it is a real difficulty that while that technique, if you like, is available to us, if one were to do that in a tunnel, given that you have got gases like carbon monoxide floating around, and you were somehow to slow the air rates down through some means, which would be possible but difficult and physically very obvious, the risk it then entailed would be - I think it is one you could not countenance - that you would risk imposing quite serious problems in terms of an asphixiant gas like carbon monoxide. So it is very much a dilemma.

I think the difficulty then, and I have dealt with it in a little more detail, is that in terms of what one might be able to do, yes, you can have a reasonable go at removing particles. I take the view though that you would want a demonstration that the tunnel clearly was contributing a major particle problem outside to justify that. There is a provision to retrofit within the stack, and if there was a demonstration, which it seems to me is yet to be made, it may exist, I do not know, yes, if you were getting an increase in PM substantially and demonstrably as a result of the tunnel's operation, the stack's operation, you could do something about it. You may not go all the way, but you could do something. It just seems to me at the moment that demonstration is not there, so the case for that is one you have to consider carefully.

The difficulty I have is more in relation to the treatment of air within the tunnel, where I think there are substantial difficulties. I come back to my point about the initial design of the ventilation stack and perhaps some perspective thoughts about other tunnels. I have the view that while there may well be things that could be done, and I do not deny that they should be looked at, I think it will be exceedingly difficult to clean pollutants other than course particles, where I think the technology exists from in-tunnel air, and I think the provision to do so, not withstanding what I have just said, would rely on designing the appropriate features into a tunnel in advance.

I have the view that we should look very carefully in all our considerations at the source of these problems. I go back to Dr Best's comment in relation to the possibility, and I do not question it, of chemicals, very volatile organics, various other chemicals, which we have not yet developed the sophistication to monitor, causing problems, and of existing pollutants causing problems below benchmark levels. But the source of those pollutants is not inherently a tunnel or a stack, but motor vehicles. Control of them, I believe, at the end of the day has to be at source. If you face a difficulty with a particular tunnel, stack or a prospective one, you clearly must do all you can, but going back one step from the issue, I believe really what you are seeking to do, given that the whole idea of the tunnel itself is to improve traffic flow in the first place and therefore directly reduce emissions, is to try and make sure that the end effect of that tunnel is to get a dispersion so that you get that slight reduction in overall spread, but nothing you do within a tunnel or within a stack will remove the difficulty that that source comes from the vehicle. I think the critical thing - and I did mention it some years ago in the report that I did for Canterbury Council prior to my first appearance here - is that in all of the things we deal with, we cannot lose sight of the fact that the managing downwards of emissions from fuels, the use of cleaner fuels, the acceleration of technology change, which is easier said than done, because many internal combustion engines have reached very advanced stages, but more particularly I think the managing down of the dependence on private vehicle kilometres are issues that I think we need to consider. I know they are not within the realm of a tunnel operator or perhaps within the realm of what we are doing, but I think in any overall recommendation there is a consideration as to where the source of this situation is.

I have used the words in my report, I have likened air pollution from a vehicle exhaust as letting the genie out of the bottle, and I think once it is out of the bottle you have got a problem getting it back in. You can do certain things, and within a captive space like a tunnel, if you have a problem with particulates, particularly the courser end, because I think the very fine ones the argument is not demonstrated, it may be demonstrated, you can do something about the moving particles. I think it is going to be enormously difficult, in engineering terms and trafficable terms, to remove many of the other gasses.

So I come back to my point about a tunnel. There is a fundamental need I think, and I understand the political difficulties involved in it, to leave it to those who design these tunnels to design them so that the natural processes of tunnel ventilation, the conduction of air, the flushing and diluting of pollutants, notwithstanding the fact that it would

be better if those pollutants were not there, but that those processes proceed and are allowed to proceed on the most efficient possible basis.

I go back to the point: I understand exactly how we arrived at a single stack system at Turrella. I take the view essentially it was the only way perhaps to politically facilitate the introduction of a tunnel as opposed to a surface road, the need for which has been demonstrated by traffic volumes. However we are moving now to a second and a third major tunnel in Sydney. We need to examine whether we are using the very best possible mechanism, the simplest, lowest energy and safest method of ventilating. At the end of the day I have a concern, and I appreciate people have other views, once that genie is out of the bottle, it is a very difficult task to get many parts of it back in and we need the recognised source.

I have concluded my paper, and I recognise it is brief, with some comments I think are important. I rather think the issue of what is going on inside the M5 East — and it is beyond the control of operators, it is a function of traffic volumes and circumstance — warrants an independent review. We have the capacity to do it quickly and effectively in Australia, it is not rocket science, but at arms length in fairness to all parties it would be sensible to consider a brief expert panel who could determine (a) whether there is an issue and form the view the expressions I am putting forward are wrong. There may be some other issues that may be put forward would also be able to be considered. I put forward the stewardship or chairmanship someone like the Commonwealth Chief Scientist, not an adversarial blame scenario but a process by which we can importantly determine how well that is working. It may be my concerns are misplaced. I have only had a preliminary look at the information available publicly but I suspect it warrants a look.

If in fact that tunnel is just working to close to capacity limits pushing the envelope in terms of the ventilation system perhaps there is something clearly one should look at. There is a substantial risk involved. I put the scenario there have been questions raised about exposure to carbon monoxide, for how long; clearly it is a short-term problem; but I put the hypothetical someone entering that tunnel from the western side heading east in a modern car which is virtually airtight but with the air-conditioning events open, gets a few hundred metres into a point of peak carbon monoxide — because these things peak and trough inside the tunnel with ventilation gradients and so on; fills their car with gas at the worst point, says, "That stinks" and shuts the vents off, they are operating with that in-car air beyond the tunnel. This is an issue that is quite important like the area of air quality in a building compared to external air quality.

I think it comes to the question of risk; and in all circumstances in the interest of all parties, an analysis of that risk and how far you take it in terms of some of the unknowns is difficult. I take the view you have to truncate this in things you can determine. I think there are issues that can and need to be addressed. The resolution may be there is no difficulty, the perception is wrong, I have it wrong for example and I would be delighted if that is the case but I think because of the risk and the importance of it — and I go back to the air quality issue and we all share the view it is an important matter that warrants a quick, time effective, arms length and rigorous review in the interest of all concerned. If there is no problem; that is the end of the path. If there is a potential problem there is the issue of what might best be done to ensure the M5 East proceeds safely. I am talking in terms of in-tunnel air and in subsequent tunnels if there is a better way to do it and we learn from that experience — and we have learned here two lessons that an elevated ventilation stack appears to be delivering in the crude terms that we measure effective dispersion. I know there are alternate views. We are perhaps learning if you play around too much and introduced too many constrains to the way you move the air inside the tunnel you can shift the problem inside the tunnel. There is a lesson in that that may be quite important to future tunnels and their most effective and safest possible design. I think that is worth pursuing.

I conclude by saying two things. I have put a private view; I do not represent anyone. That is put in a constructive way. It is not intended to be an overt criticism of anyone in particular. We have reached a point in a complex process with a lot of factors acting upon it and the sensible thing is to look at those things that may be a difficulty and perhaps eliminate the possibility; but if we find something at arm's length we can resolve and deal with and from which we can learn to follow that path.

The Hon. MALCOLM JONES: Currently there is 900 cubic metres of air per second being processed through the fans and out through the stack. Do you think the idea of having electrostatic precipitators retrofitted inside the main tunnel rather than near the stack to clean the air inside the tunnel, so therefore we

can reduce the amount of gas that needs to be pushed through the stack is a practical, worthwhile exercise?

Mr CHILD: If one was going to use technology there is a logical stream to say it is better to use it in the tunnel and therefore derive a benefit on what is discharged and also the internal air than to put it downstream. I suspect there are grounds to think there may be a problem in the tunnel or potential problem. I do not want to over state it. Your question was where to put any such equipment and in a future tunnel, yes; I am not familiar with the design considerations and what facilities are available within the existing tunnel but in principle I agree.

The Hon. AMANDA FAZIO: You mention in your submission comparisons to the way in which these issues have been handled in road traffic tunnels in Japan and Scandinavia. Do you know if when any of those comparisons have been made about the control of exhaust emissions and ventilation systems between those tunnels and the M5 East, whether the factor of the considerable age of the Australian vehicle fleet has been taken into account given we have a much higher proportion of cars using lead replacement petrol and the overall age of the vehicle fleet means we have a lot more inefficient, dirtier engines operating on the road that increase the amount of pollution?

Mr CHILD: It is an issue, yes it is my understanding and I think it is a fact that we have a relatively old fleet and in our urban areas a fleet in terms of emission control that is below standards we would like to have by a margin. How that compares to situations overseas is difficult. We live in a city of four and a half million plus people. Some of the tunnels trialled in Norway are in a very big country of four and a half million people, traffic rates are generally lower and where it is interesting and frustrating, in tunnels there where technology has been put in place the traffic volumes are so low it has not been able to be tested and that is an issue. Where it has been tested some reports are disappointing and objectively, because it is put by people who promoted it, it is not put by nay Sayers, people say: "We are disappointed the theoretical performance of this equipment has not translated into the tunnel." That does not mean the equipment will not work or other equipment will work or they are doing something wrong, but there is a mixed bag. You have to translate what you can theoretical do with an electrostatic precipitator with what you can do in a tunnel.

I make two points, technology is improving and it is reasonable to assume to use these things you get the process right. In terms of Japan there is an interesting comment in that have recently suffered seriously in particular in Yokohama and Tokyo from particle pollution. They have taken the view to mandate the introduction of natural gas in their vehicle fleet in those cities — you have to have this many vehicles by such and such a date — boom, boom, boom. They have taken the view, notwithstanding whatever other efforts they make, you have to not only talk around the question it would be nice if we did something at a source but to mandate a change. I suspect at the end of the day if it is not deviating too far, in whatever mix of solutions we find to these issues a more aggressive view of the whole transport mix will be part of it. I understand that is not a tunnel issue yet it is a related issue.

The Hon. AMANDA FAZIO: I have not been in any of the overseas road tunnels. Do you know if they have separate or dual tunnels like the M5 East or on tunnel with two-way traffic?

Mr CHILD: A bit of both, most of the busy ones follow the same pattern of two parallel tubes. There are some long tunnels that go the other way and that poses particular challenges; but to put this in context the M5 East is a significant road tunnel in terms of traffic and dimension by international standards. It is a big project. We have a view in Australia we test what we do against what someone has done overseas, but this at the forefront in terms of impact. There might be people looking to us. It is a major project. To answer your question, busy tunnels, high-volume tunnels, I make the comment generally, separate tubes for safety and other reasons, segregated traffic in two directions in two tubes.

The Hon. AMANDA FAZIO: Are the dual tube tunnels usually harder to ventilate than a single tunnel?

Mr CHILD: Given the flexibility to do it as you feel was the best way because you have the advantage of a unidirectional traffic flow drawing air with it acting like a piston, in fact if you were to ventilate the two tubes of a parallel traffic separated tunnel separately and independently you have some advantages. Where you

have mixed traffic flow that gets tricky in terms of ventilation because of the effect of the traffic within the tunnel, particularly when it is busy. I think major tunnels with high traffic volumes should generally be considering separated flows. It opens an opportunity if it is open to you as to how you ventilate the tunnel.

The Hon. JOHN RYAN: You said technology was improving and made observations about the potential capacity of electrostatic precipitators and that they were unable to remove particles under one micron. At an earlier inquiry we heard evidence from two manufacturers indicating their electrostatic precipitators were able to take out 90 percent of particles down to .3 microns. Would you be prepared to agree there had been significant improvement in the technology over recent years?

Mr CHILD: If I can I will answer it in parts. For example, there is a trial of modified electrostatic precipitation equipment currently going on in Austria that seems to be showing very good results. There is no question. I think some of those claims in terms of what a system might be able to achieve on the manufacturer's sheet is not necessarily translated into practice and that happens. Do I believe in the possibility that you can improve the efficiency? Of course. But when you start to get down to those very tiny particles under one micron, there is a range of very real physical scientific reasons; they are very tiny; they are being buffeted around by the air itself; they are less susceptible to gravitational fix; they are harder to get a charge on to get them to a plug to separate them out. Should we leave open the possibility of technology to improve it? Absolutely, but I make my comment in terms of the fact that if you signed over the cheque today to go out and buy the machine that will fix the problem, I am not sure you could get it today. Is someone working on it right now and will you be able to get it? You would be foolish not to allow that possibility. But I suppose I am putting a caution and a caveat there based just on some of the work that I have seen, but I absolutely do not disqualify the possibility of change, no.

The Hon. JOHN RYAN: If an electrostatic precipitator were operated within the tunnel, would it be fair to say that whilst it would not eliminate particles below one micron, it would remove some of them?

Mr CHILD: Yes.

The Hon. JOHN RYAN: Because there must be something for the smaller ones to attach to?

Mr CHILD: That is correct, and there would be a view put, if you like, if you have got a problem anything is better than nothing, and if you are able to find the sort of technology that you could retrofit and you could demonstrate, and I have not seen all of the figures, but if it were demonstrated for example that there was an issue with particles within the tunnel, then I think that would tend to drive a particular course of action.

I made some specific comments earlier about air quality outside the tunnel, where I do put the view if you cannot demonstrate the problem, there is not much point in trying to cure it. One of the reasons I have floated the idea that a review would be appropriate, I think in the interests of all concerned and in the interests of future work, a good look at just what is happening inside the tunnel, what options are available, at arms length, yes, and then I might have a view, someone else might have a view, let us put some people together who can sort that through in an objective and constructive way and I think you do not slam the door on that.

The Hon. JOHN RYAN: In case it was misunderstood, you were saying that in future tunnels, if we were going to build another five kilometre tunnel somewhere else in Sydney, you would be more inclined to the view that it would be better to have more stacks above it, open pitch design, similar to the Eastern Suburbs tunnel and so on, so that the pollution largely flows into the atmosphere in a way more similar to an open road situation. Is that what you are saying?

Mr CHILD: Yes, that was. I recognise there are physical constraints on that, but my view is simple, that you do these things to improve traffic flows. When you improve traffic flows, you reduce pollution, directionally, generally, you do not eliminate it. Therefore, if you can get back as close as possible with that reduced pollution to where you started, with a surface dispersion, that is a sensible thing to do. That is why two stacks are better than one, all else being equal, and a few open cuts, not too bad. Yes, I agree with that.

CHAIR: In your submission on page 4 you talk about the 60 long tunnels in Japan 42 include EP technology.

Mr CHILD: Yes.

CHAIR: Where did the information come from?

Mr CHILD: That information, and I will give you a confirmatory contact, it was provided to me in response to correspondence I put to the roads authority in Japan. They went away and came back, so I can source that for you and I will do that. When I put those few typoes in, I will put a source to that at the bottom.

CHAIR: In the Department of Urban Affairs and Planning submission, they said that in the tunnels most of the EPs are switched off. Do you have any evidence that they switch off the EP in Japan?

Mr CHILD: I do not know. In response to my inquiry, I did not get an answer to that. In fact, I did not put that question to them. I was interested in whether they use it and why. The general view was for visibility, but with a consideration to air quality for health reasons. Obviously the two go together. In terms of how frequently it is operated, I could make an inquiry. I could not comment with credit, but I would be happy to make that inquiry.

CHAIR: I suspect they were talking about the Norwegian tunnels and made it as an overall comment. It seems to me that a lot of concentration has been made on the Norwegian EP and not much on the Japanese, and it is much more advanced in Japan. Do you know what sort of technology they use?

Mr CHILD: They use their own technology from Japanese based electrical manufacturers, Mitsui and so on. I would therefore believe that their technology is sound, because the Japanese industry in those areas is pretty reasonable, and the reason I quoted those numbers is that I asked them how many tunnels they had and they said about 1,200, and just simply, "What is your use of electrostatic precipitation?" Perhaps some further drilling down to why they use it and when it is on and when it is off would be interesting. I have found that it is not the easiest thing in the world to get answers from Japanese sources. They are very circumspect and less communicative, for whatever reason, probably just language, culture, whatever, and perhaps some others. So I would have to leave it open. I do not know the answer to your question.

CHAIR: You would not know if there are more companies measuring the EP in Japan?

Mr CHILD: I believe there are.

CHAIR: Do you have any idea whatsoever of the costs?

Mr CHILD: No, I do not. I think in something like that you would have to look at a purpose application to comment on cost I think. I would not like to comment on that.

CHAIR: It certainly is being used. Do you have any more information on the Austrian trial that is being undergone?

Mr CHILD: I have written for information. I would be happy to submit that to you. I have not received it as yet, but the feedback I get, from more than one person and from the PR group, is that it is work of interest. It seems to me to be a trial that has attracted the attention of people who might have been critical of other technologies, and that raised my interest, in that it is being trialled in a tunnel not too far from Vienna. So it is a field trial as opposed to a laboratory trial, and the initial response I got is that it may represent an improvement on past technology, which comes to the point on development. I would be very pleased to pass on any information I get in that respect but I haven't got the full information as yet.

CHAIR: Have you heard any information that the European Union is bringing in a standard of 50 micrograms per cubic metre inside tunnels for particulate matter?

Mr CHILD: No, I have not.

(The witness withdrew)

(Luncheon adjournment)

MICHAEL DANIEL CROWLEY, Manager, Sydney Planning, NSW Environment Protection Authority, 79 George Street, Parramatta;

COLIN JOSEPH WOODWARD, Acting Director General, NSW Environment Protection Authority, 59 Goulburn Street, Sydney;

CHRISTOPHER RAY EISER, Director of Atmospheric Science, NSW Environment Protection Authority, 59 Goulburn Street, Sydney, sworn and examined:

CHAIR: Are you conversant with the terms of reference of this inquiry?

Mr CROWLEY: Yes, I am.

Mr WOODWARD: Yes, I am.

Ms FINLAY: Yes.

Mr EISER: Yes.

CHAIR: If you should consider at any stage during your evidence that, in the public interest, certain evidence or documents you may wish to present should be heard or seen only by the Committee, the Committee would be willing to consider your request, but it may be overturned by a vote of the Legislative Council. Do you wish to make an opening statement?

Mr WOODWARD: Yes, please. The EPA has submitted a submission to the inquiry and I would like to go through that in terms of providing a summary to the Committee.

The EPA is one of the determining authorities for the M5 East under Part 5 of the Environmental Planning and Assessment Act and, in addition, under the Protection of the Environment Operations Act, the EPA has responsibility for regulating the construction of the M5 East motorway.

In terms of the EPA's role through the planning and approval process, the EPA had responsibility to advise on the air quality standards for the key emissions from the tunnel ventilation systems, both the stack and the portals; to review and assess the air quality modelling and assessments; to advise on appropriate consent conditions under the Planning Act and to review the adequacy of some of the monitoring requirements for the tunnel. In advising the relevant standards, the EPA takes account of national standards that are available and, in July 1998, the National Environment Protection Council did provide a National Environment Protection Measure for ambient air quality. That NEPM, as it is called, has been established for the whole of Australia now and that provides goals, which are required to be met within a 10-year timeframe.

The Australian NEPM is actually quite stringent by world standards and particle standards are especially stringent and generally lower than in most other areas, for example, in the United States. By "lower" I mean more stringent. The ambient air NEPM uses PM10 as a measure of fine particles, which are particles less than 10 microns in size. The pollutants of relevance with respect to the M5 East are the finer particles, oxides of nitrogen, carbon monoxide, lead, ozone and sulphur dioxide. Putting the M5 East into context across Sydney for all of those pollutants across the greater metropolitan area of Sydney, in terms of carbon monoxide, sulphur dioxide, lead and nitrogen dioxide these are generally well within the current national air quality standards. However, the levels of ozone and particulates in the Sydney basin on occasions do exceed those standards, particularly under certain meteorological conditions. The main sources of these particular pollutants, that is the ozone and the particles, are from petrol motor vehicles, diesel motor vehicles, domestic wood heaters and also commercial premises. The fine particles, although they mainly come from motor vehicles, are also contributed to the atmosphere by industry and domestic sources, such as wood heating. Generally the fine particles only exceed the national standard in extreme natural events, such as fires and dust storms.

The air quality goals that were advised by the EPA were contained in the consent conditions issued by the Minister for Urban Affairs and Planning at the time and, in relation to PM10s, it was 50 micrograms per cubic metre, which is the NEPM standard, and in relation to NOX it was 125 PPM. The NEPM itself, in the description of the NEPM, says that NEPM goals are ambient goals and are not meant to be used as standards to apply to actual point sources of pollution. You are meant to take those standards into account when assessing point sources to work out strategies to ensure that the ultimate ambient levels are achieved. In that respect the emission levels that were applied to the tunnel were quite stringent. Because it was acknowledged that, under some circumstances, there may be exceedances of those standards, particularly the particulates and the PM10s, because of meteorological or other conditions, there was some considerable discussion at the time of planning consent about how could you contribute the emissions from the tunnel to any exceedance and that was resolved by having a condition that said that the tunnel should not contribute to additional exceedances of those emissions and there was a condition that required a protocol to be developed and to be agreed by relevant government agencies, including the community. That protocol was developed and signed off by all the relevant parties and has been the basis upon which any exceedance of the ambient air quality has been assessed in relation to emissions from the tunnel itself.

The EPA has reviewed the air monitoring information that is available to date and compared it back to 1995, so we have taken from 1995 to 2001 and looked in particular at the fine particles and during that period the air standard has been exceeded on eight occasions, and we have provided a table in the submission. There was only one exceedance between 1995 and 1999 and there have been seven exceedances in 2000 and 2001. In each of those cases they were due to extreme weather conditions, primarily the fires, the hazard reduction burning and the serious bushfires we had in the 2001 period. In relation to assessing the protocol it has been determined there has not been an exceedance of the NEPM caused by the tunnel itself. At the time of approval there was a report done by the CSIR0 who independently investigated the report on air quality impacts of the M5 East tunnel.

That report concluded there had been some underestimation of the predicted emissions of PM10's but also concluded that the overall contribution of PM10's from the stack would only be very small. It would appear that in response to that the consent conditions required a sub-regional air quality management plan to address the other sources of particulates in the actual area surrounding the tunnel. That was in recognition of the fact particles come from other sources, for example in relation to wood fires, on average 25 per cent of the fine particulates in the air are from wood fires. As part of that air quality management plan a voluntary buyback scheme for home heaters was introduced. I understand about 200 people have taken advantage of that at the moment to move towards cleaner fuel for home heating such as natural gas. In relation to the outcome, there has been no exceedance of the air NEPM as a result of the tunnel.

In relation to in-tunnel goals, the goal provided to Planning NSW based on advice from the EPA and NSW Health was a short-term goal of fifteen minutes for 87ppm not to be exceeded. This goal is based on World Health Organisation standards.

CHAIR: For carbon monoxide, not PM10?

Mr WOODWARD: No, for carbon monoxide. I would like to move specifically to the terms of reference. The first term of reference was the Legislative Council Standing Committee report on the 2001 inquiry and the EPA response. There were two recommendations that the EPA had specific responsibilities for reporting on and the first was No. 7 where the Committee recommended the Government should take a lead role in work being undertaken by the National Environment Protection Council in development of the national air standard for PM2.5's, the finer particles less than 2.5 microns in size. The PM10's include the PM2.5's as a sub-set of those. The New South Wales Government has taken a fairly strong involvement in this whole process. The department of health and EPA supported by the RTA have been involved in the Commonwealth process.

The National Environment Protection Council has been assessing the benefit of developing a standard for PM2.5's and in October this year put out a discussion document with a draft National Environment Protection Measure for PM2.5's. The Council acknowledged that there is insufficient information worldwide to actually provide a recommended standard for PM2.5's at this stage and therefore has recommended for

Australia there be a reporting level rather than a standard to be met and that that be reported against for three years; and then based on that information and also additional information from around the world develop a standard in three years time. That discussion paper was released in October 2002 and there was a public workshop in Sydney, as in other cities around New South Wales, in October and there is another coming up at the end of November. Comments are due by the end of December on that.

It is worth noting the standards for these, however, still only apply to longer-term exposures not short-term exposures. That is the annual exposure and also a 24-hour one; but even the discussion paper finds some difficulty in terms of providing any guidance for standards for short-term exposures for particulates. In relation to in-tunnel carbon monoxide levels, EPA is aware that has been some eight incidents where in-tunnel carbon monoxide concentrations have exceeded the 15-minute carbon monoxide level provided. In each of these cases that has occurred at one monitoring station across the tunnel—I understand there are eight monitors along the length of the tunnel. Our advice is that in terms of individual exposure from a motorist no particular person has been exposed to more than 15 minutes of that particular level.

EPA has had discussions with the RTA, Planning NSW and health in relation to the interpretation of that particular condition. The RTA has suggested what is most appropriate is to have a condition that relates to the exposure of individuals driving through the tunnel rather than necessarily at any single monitoring station because that does not provide a relative exposure level and are there is further work being undertaken to try and work out how you would actually be able to achieve that desired outcome. There is general agreement that the main thing we are trying to avoid having any person exposed to a carbon monoxide level for more than 15 minutes of greater than 87ppm. One of the key issues in relation to controlling pollution from the M5 East is the source of the pollution in the first place. There has been a lot of discussion about trying to control emissions coming out of stacks and portal. The philosophy of the EPA and the Government generally has been to try and get back to the source of the pollution in the first place. In that context it is worth acknowledging the emissions from the M5 East are from actual vehicles, primarily trucks and cars going through the tunnel. Therefore the focus needs to be on reducing emissions from those. In that regard there are new standards coming into place over the next few years that have just started for both cleaner fuels and stricter limits for omissions from diesels and petrol motor vehicles.

In relation to the fuels, petrol for example, the sulphur dioxide level under the national requirements will be limited to 500ppm as of 1 January 2002. Sulphur dioxide contributes to pollution as well as particulates. In 2005 that will drop to 150, a fairly substantial drop. In relation to new diesels in 2003 they will be limited in terms of fuel to 500ppm for sulphur dioxide but by 2006 that will reduce a massive level down to 50ppm. By 2006 for new diesel vehicles that will be an over 90 percent reduction in particulates compared to current emission levels. In practice that means we predict between 2000 and 2020 total hydrocarbons should fall by 26 percent, oxides of nitrogen by 71 percent, carbon monoxide by 75 percent and particles by 35 percent; lead and sulphur emissions should fall dramatically by 93 and 84 percent. In addition emissions of air toxics such as benzene are expected to fall by 50 and 70 percent. That is not to say we should ignore the emissions from the tunnel at the moment. Indeed, the requirements that went into the approval process are aimed to achieve the current Australian standards, which are stringent by world standards. What it is saying, I think, is that we should also acknowledge that over time there should be quite substantial improvements in air quality from vehicles as well. It is worth at least acknowledging that.

The other recommendation the Committee made from the 2001 enquiry was No. 10:

> The Committee further recommends the EPA investigates and reports on diffuse and point sources of pollution in the Turrella region and that all scheduled industries should be assessed to ensure they are complying with licence requirements for air pollutants and non-scheduled premises should be targeted to ensure they are adopting best practice in the reduction of air pollutants and the EPA should facilitate industries in the region to move towards cleaner production technologies.

In this regard the M5 East sub-region air quality plan, a requirement of the consent process, has included an inventory of all PM10 and oxide of nitrogen sources. There has been developed a record in this particular sub-region including industrial, commercial and domestic sources. The plan included a cost effective assessment of the broad range of strategies to reduce these emissions from all sources. There has been work that has been implemented in relation to the wood heater buyback scheme. In addition the EPA reviewed scheduled premises licenced by the EPA in the sub-region to confirm the licences are complying with the

conditions--particular the air pollution conditions.

CHAIR: What about unscheduled premises?

Mr WOODWARD: The inventory has provided useful information for councils, who are the primary environmental regulators for the smaller and medium industries, to target those. The EPA role is to support councils in providing training and resource capacity building in relation to these, including cleaning production approaches. The EPA has been developing cleaner production partnership programs with a range of unlicensed premises that focus particularly on air emissions like hydrocarbons from dry cleaning places that are targeted to deal with these air pollutants.

The next reference is 3.2; Health and safety risks for people using the M5 tunnel including fire risk and risk to commercial drivers and tunnel operators. The EPA has been working with NSW Health, Planning NSW and the RTA in relation to appropriate goals and approval conditions for in-tunnel exposure. In relation to find particles the EPA is not aware of any suitable short-term goal that could be applied to in-tunnel levels in relation to particulate matter. The EPA is liaising regularly with NSW Health on appropriate short-term exposure standards for particulates. In relation to carbon monoxide, as I said, the EPA has already provided advice on that and I have already talked about that.

I think the next term of reference related to 3.3, which are air quality and health impacts for residents, workers and businesses around the tunnel stack and the tunnel entrances. The EPA has analysed, as I said, the data from the monitoring of PM10s and nitrogen oxide before and after the opening of the M5 East and that has shown no significant differences due to the M5 East operation. The analysis looked at data from the EPA's Earlwood and the RTA's Undercliffe and Turrella air monitoring stations from June 2000 to 31 May 2002, acknowledging that the M5 East opened on 9 December 2001. I do have to say, of course, that the caveat on that is that, whilst we have the advantage of some monitoring since the tunnel has been open, it has not been open for a long time at this stage, so I would not like that to be interpreted as a comprehensive assessment of it, it is simply the assessment of the information that is available to date and we will continue to gather that information and we are keen to do a more comprehensive analysis after about 18 to 24 months of operation.

The next term of reference was 3.4 in relation to the adequacy of conditions of approval, air quality and monitoring provisions and enforcement. In relation to the adequacy of approval conditions I think the impact of the motorway on the ambient air quality has been within predicted levels. Investigation of the in-tunnel carbon monoxide levels has indicated that there were several different causes for these incidents ranging from human and programming errors to problems with integration of air quality monitoring and traffic management systems and our understanding is that the causes of these incidents have now been addressed and are able to be dealt with within the existing approval conditions for the project. In relation to the adequacy of the air quality and monitoring provisions, the standards for the project, as I said, are based on national standards, which are stringent by world standards. The monitoring provisions for the project are extensive and have worked in terms of identifying the problems that have emerged with the operation of the tunnel. The reporting requirements for the ambient air quality have worked in relation to the protocol for assessing any exceedances of the PM10 goals and the contribution of those from the tunnel. There was some issue earlier in terms of delay in reporting the first in-tunnel carbon monoxide incident as the tunnel operator reported the exceedance in a monthly air quality report rather than alerting the RTA and other agencies within a 24-hour period. That has since been rectified with Planning requiring the RTA to alert the EPA, NSW Health and Planning within 24 hours of any in-tunnel exceedance and that has operated effectively since then.

In relation to adequacy of enforcement through the planning consent conditions, Planning NSW has a primary role in enforcing the approval consent conditions for the project and the EPA has been working closely with Planning, as I said, NSW Health and with the RTA in terms of promptly identifying and resolving any issues that have arisen in relation to that and ensuring that appropriate action has been taken.

The term of reference 3.5 is in relation to viability of different systems for filtration and treatment of tunnel emissions. The EPA, I think as I have mentioned particularly in the previous inquiries, is focused on providing the appropriate goals and making sure those goals are satisfactory to protect the environment and the health of people and our approach is a performance-based approach rather than specifying actual equipment or

the technical thing that needs to be installed. The EPA does have a role in assessing the application that may be provided in terms of achieving the goal and the reason for this approach by the EPA is to ensure that it is placing the onus on the proponent to ensure that whatever technology is used will achieve the environmental outcomes set for the project and also to encourage cost effectiveness for achieving the outcomes and to encourage innovation in terms of achieving those outcomes as well and indeed trying to better the outcomes that might be set simply by the legislative requirements.

That is the opening submission I would like to make, thank you.

CHAIR: Tony Wright wrote to the Minister for the Environment in July saying that the EPA Board understands that there is no standard for particle emissions for short term in-tunnel exposure, but that NSW Health has indicated its concern if levels of traffic congestion mean that people were in the tunnel for more than 15 minutes. Now there are no readings, as far as I know, on in-tunnel particulate matter levels. Do you know of any and, if so, what are they, on average?

Mr WOODWARD: I am certainly not aware of any standards of in-tunnel air quality levels. I know that NSW Health is doing some work in terms of actual exposure of people to in-tunnel air quality, including particulates, in terms of in-cabin assessment of people, but NSW Health will be able to provide more information than that.

CHAIR: Apparently the average levels are about 1500 micrograms per cubic metre in the tunnel. If you were to imagine that people were being exposed for, say, seven minutes twice a day to 1500 micrograms per cubic metre, that would give them an additional exposure to something like 12 to 15 micrograms per cubic metre on an average daily basis which, according to the Department of Health, would increase death threat by one percent. We do not know whether that relates to course particles or very fine particles. Do you not think it is about time that we should be developing standards for in-tunnel exposure as well as ambient air quality?

Mr WOODWARD: I think what is important is to develop standards that are appropriate for everyone regardless of where they are and it is not a case of necessarily in-tunnel versus outside-tunnel. There are no short-term standards for fine particulates that are available for either in-tunnel or out-of-tunnel. It is an issue that is subject to some international interest and it is one that is particularly being considered at the national level with the draft discussion paper that is out there, but I am not able to comment or speculate on the actual health impacts to people with short-term exposure to those.

CHAIR: What was the mooted standard for PM2.5s? What are we measuring for? Is it the same as PM10s?

Mr WOODWARD: No, I think in general terms PM2.5s tend to be about half of PM10s.

Mr EISER: In terms of PM2.5 it is the equivalent diameter of the particle. According to our monitoring around Sydney it is about half the weight in terms of concentration in the atmosphere, so the standards that were mooted in the discussion paper from the National Environment Protection Council are for a 24 hour average for PM2.5 of 25 micrograms per cubic metre and for an annual average for PM2.5 of 8 micrograms per cubic metre.

Mr WOODWARD: That is a reporting level, not a standard, though.

CHAIR: Yes, I understand what you are saying. It may become a standard at some point. At the GRIMM testing station where there has been monitoring, do you know what the levels were?

Mr EISER: I am not aware of the levels at the GRIMM testing station, the station outside of the tunnel and the ventilation system?

CHAIR: Yes.

Mr EISER: In terms of the GRIMM numbers outside of the ventilation stack itself, no, I am not aware

of the numbers that have actually been measured. They would be equivalent to the existing monitoring monitors that we have, that the RTA has at its stations. They would measure PM2.5.

CHAIR: Do we have any measurements at all for Sydney, for example, for PM2.5s that you know of?

Mr EISER: Yes, we do. We have been reporting them for quite a number of years, since 1996.

CHAIR: Where are they measured?

Mr EISER: They are measured at our monitoring stations. We have 10 monitoring stations in Sydney, Newcastle and Wollongong that measure PM2.5 and basically we have put all of that information on the 24 hour averages and the annual averages into the national process to inform setting of the reporting of it.

CHAIR: Are they available to the Committee?

Mr EISER: They are certainly available to the Committee.

CHAIR: And we will try to get hold of the readings at the GRIMM monitoring station and compare those with the averages. What I would like to know is what the percentage of PM2.5s is of PM10s because there is no breakdown now of the ambient air quality from the stack, of course.

Mr EISER: I can comment from an ambient perspective. In terms of the data we have, it varies on the time of year because the composition of the particles changes. It ranges from about .2, so 20 percent of the PM10, to about 90 percent of the PM10 and over the whole year on average it is about 50 percent of the PM10 level.

CHAIR: So we know that much at least.

Mr WOODWARD: Could I just add, in relation to that information that is on the EPA's web site already, so that information is actually in the public arena.

CHAIR: That is excellent. Do we know whether the PM2.5 and below is a higher percentage in diesel exhaust?

Mr EISER: In terms of diesel, we understand that the bulk of the particles emitted from diesels are less than PM2.5, and certainly more than 90 percent less than PM1, so they are the very, very fine particles, size range.

CHAIR: So we might assume then that the PM in the tunnel, which is clearly visible to people driving through it, would have 90 percent PM2.5 which would be of much greater risk than if they were actually PM10.

Mr EISER: We could check that with the monitoring data, but certainly that is something to do some further work on.

CHAIR: I am talking about inside the tunnel, not outside.

Mr EISER: Inside the tunnel you would have to look at some monitoring to see the ratio between the two, but we would expect the particles in the tunnel to be in the very fine fraction.

CHAIR: Do you not think it is incumbent upon the EPA to develop some kind of standard for in-tunnel emissions bearing in mind that 90 percent are very fine particles?

Mr WOODWARD: As I said, we do not actually distinguish between in-tunnel and out-of-tunnel. What we are interested in is the exposure of any person to safe levels of air quality, whether they are in a tunnel or out of a tunnel as well, so the standards should be applicable in both cases, but in terms of those

levels, yes, we are very interested in it and we are involved in the process, but it is a national process. The information that Mr Eiser talked about that is on our air monitoring sites around Sydney is information that we are also feeding into the national process as well, so we are actively involved in that, but I do not think it is appropriate for the EPA to try and go out alone and develop a standard outside that process because we do not have the information nor the expertise and it is also very much related to the health impacts on people as well, that is why it has to have NSW Health and the other key players involved as well.

CHAIR: We have heard evidence that there is not much difference in the PM10 levels from the monitoring stations prior to the stack being built but we do not know the level of PM.2.5 in that particulate matter, it could be three times higher?

Mr WOODWARD: We can supply PM2.5 and PM10 data for the Earlwood site for the same times of the year.

The Hon. MALCOLM JONES: In 3.4 you state:

In general the approval conditions for the project have proved effective for the proposal.

Are you convinced the tunnel is performing to the standards laid down by the EPA?

Mr WOODWARD: The EPA advised the appropriate standards and they were included in the consent for the process. The approval conditions have proved effective. That is shown to the extent the standards were set and they were met for most of the emissions. The ambient emissions were where the initial concern was. They were not met strictly for some of the carbon monoxide levels, as I explained, in terms of exposure for people that does not correlate to people driving through, so people were not necessarily exposed; but approval conditions allowed for appropriate follow-on steps if those levels were not met. The statement is true in terms of the conditions being effective.

The Hon. MALCOLM JONES: This Committee has a problem because we are on our third inquiry, driven by the fact people are getting sick, if they are not getting sick than their lives have been severely damaged by the emissions from the stack. Either they are all wrong and your standards and approval mechanism is right; or you are wrong and they are right. What can you say about that?

Mr WOODWARD: We are very concerned about this. We have never said anyone is wrong in this process. What we have done is use the standards that are stringent standards by world standards, to apply to this project in the first place. That is based on the best medical and environmental information that is available around the world. We are not more expert to say that is right or wrong. We have used that in good faith, they are the standards applied. In terms of the stack emissions they are being met. People have expressed concern it is impacting on their health. We have met with the residents and so has NSW Health, Planning NSW and others as well and there has been a survey and work going on in terms of trying to identify those impacts people have complained about. I know NSW Health is taking that very seriously and they are doing a study on the impact on health of people around the stack. I think that is the appropriate response Government should take. It is hard to imagine in retrospect you could have any other approach to this.

The Hon. MALCOLM JONES: What about re-examination of the standards you have adopted?

Mr WOODWARD: In terms of that there has been a lot of discussion about PM2.5's but I think that has to happen in a very informed process with public and national involvement and all the experts. I do not think there is ability for EPA or residents or anyone else to say that world standard is wrong so let us grab another one. We have to go through that process and do the best we can. The important thing is that we are taking those concerns residents have raised quite seriously. That is being investigated by NSW Health, not only the impact the residents have complained about outside that, but Health is looking at the in-cabin exposure of people going through the tunnel as well.

The Hon. MALCOLM JONES: In the evidence this morning people were talking about when the wind is in a particular direction and the difficulties associated with determining which way the wind is

blowing because of the topography of the terrain. When they talk about complaints of smells of vehicle emissions and burnt rubber does that not trigger in EPA that something is wrong?

Mr WOODWARD: Of course it does, that is why we have met with the residents to try and understand these issues but importantly that is why, as I said, NSW Health in particular is looking at the actual details of that and doing more of an in-depth study on the potential impact of people's health.

The Hon. MALCOLM JONES: You are still happy to stand by the statement that the approval conditions of the project have proven effective for the proposal?

Mr WOODWARD: At this stage, based on all the best international knowledge, yes.

The Hon. MALCOLM JONES: Is that not an incongruity?

Mr WOODWARD: No I do not think so; we did not have any different knowledge that today would have suggested there would have been something more appropriate. We have used the best information in the world. It is more stringent than the US, for example, has used. Normally they are seen as a leader in terms of going for very tight environmental standards. That is why it is so important for Health to do this more detailed investigation of the concerns that have been raised by the residents rather than jumping to a conclusion that you can solve it by some other way. If we did actually do something else we may have spent a lot of money and given a false sense of security that people may not have been satisfied to solve the problem in the first place. We have to get to the root of the problem.

The Hon. JOHN RYAN: If there is a problem it is going to take a long time to address it before there is a standard? It would take a decade before there was an implemented standard?

Mr WOODWARD: I think the work Health is doing is going for a much shorter timeframe in trying to identify the outcome of that and depending on the outcome I cannot say what may or may not need to be done.

The Hon. JOHN RYAN: I understand Ms Finlay wrote to Mr Hather, Department of Urban affairs and Planning on 6 July 2001 explaining the tunnel would not be controlled by means of a licence, as would be the normal means of the EPA regulating something:

> It is therefore important that the Department of Urban Affairs and Planning is aware the M5 East approval conditions are the primary mechanism for ensuring the proponent meets the requirements for monitoring stack, portals, tunnels and ambient air quality.

What is the difference between what the EPA does in dealing with regulating a source point by a licence and how Planning NSW regulates this matter?

Mr WOODWARD: the Protection and the Environment Act determines EPA licences and there is a schedule to the Act, which determines what needs a licence from EPA. In relation to certain motorways, and this is one that is included, the construction requires approval or licensing by EPA but not the on- going operation. EPA does not licence the on-going operation of every road around New South Wales. That is in recognition of the fact it is important in relation to motorways to get the design right and deal with it. EPA involvement has been to provide input to planning consent conditions and all EPA requirements, whether EPA regulated or not, are contained in the Government approval and conditions for this motorway. As Ms Finlay said in the letter it is appropriate, EPA does not have the on-going licensing role of that, so it is important those conditions are contained in the planning consent; and indeed they were.

The Hon. JOHN RYAN: What is the difference between regulating it by means of a licence and planning consent? Are there any differences on how you would follow up on exceedances or breaches?

Mr WOODWARD: If there are any exceedances or breaches of the planning consent conditions it is appropriate for Planning NSW to follow up on those but because EPA is involved in the advice in relation to those in the first place--EPA has been heavily involved in working with Planning in relation to follow-up of any concerns about consent conditions; but the primary role for enforcement is with Planning NSW.

The Hon. JOHN RYAN: If you are enforcing a breach of a licence condition and how is that different to how you enforce that to what Planning NSW does? There must be a significant difference? If you detect a breach in a company exceeding a licence you would fine or prosecuted them—that does not appear to be an option available to Planning NSW.

Mr WOODWARD: I understand there are appropriate sanctions in relation to the way planning consent conditions are dealt with. I cannot comment on those. I can comment on EPA requirements. I am not familiar with all their available options. In general terms if there is an exceedance, breach or an incident then like the EPA, Planning NSW generally has a range of the tools available to deal with that, which could be anything from warning letters through to much more serious sanctions, to court action. Whether it is Planning NSW or EPA there is a range of responses. Normally there is an escalation of those responses if there is an issue in relation to compliance with a condition, be it a planning condition or an EPA licence condition.

The Hon. JOHN RYAN: Whatever advice you give the EPA role can only be in terms of advice, unlike almost every other area of pollution control, which the general public considers the resources and expertise to normally reside with EPA. You can only exercise that from an arm's length distance in advising another Government department?

Mr WOODWARD: That is essentially right. EPA does not licence everything that can cause pollution. What is important is that there is a mechanism for environmental requirements and those can be enforced and that is the case in this particular one. EPA does not licence the on-going day-to-day operation of motorways in New South Wales.

The Hon. JOHN RYAN: EPA has expressed a number of concerns about the tunnel particularly in terms of in-tunnel air quality. Are you satisfied you have been able to have an adequate response to all your concerns? One I might illustrate, the current standard that has been determined by Planning NSW with regard to carbon monoxide within the tunnel, I understand the WHO standard that has been discussed relates to the possibility of anyone being exposed for a greater period than fifteen minutes. That has now been interpreted to the actuality of whether someone has been exposed. It would be difficult to know how you measure that without a dead body; until someone has been poisoned that standard is not breached. Normally you would measure that standard by having a monitor and saying: Look the monitor has registered a reading over that point, therefore the possibility exists someone could have been there for fifteen minutes.

Whilst I accept the bulk of traffic flows through the tunnel there are plenty of circumstances where people would be exposed to that air quality for greater than fifteen minutes--they might have got out of their vehicle because they had an accident; they could be driving an open vehicle or motorcycle and be caught in a traffic jam for a period in excess of 15 minutes or they could have had a smell that they detected, they could have filled their cabin with what was inside the tunnel, closed off their air-vent and driven off recirculating that air for a period after they left the tunnel. Realistically how are you responding to the possibility of air tunnel quality exceedances? It is obviously a higher standard to prove someone has actually been exposed whereas normally you would put a measure there and are if it were over that standard you would consider that to be a breach?

Mr WOODWARD: I agree with the possibilities you are raising, but I think we have addressed that to the extent of having a more conservative approach at the current time of having the reference be to an exceedance measured at any one of the stations, regardless of the fact people are moving through the tunnel. The approach we have taken to date has been quite conservative because it takes up those possibilities. In fact in terms of looking at the exposure of people in the tunnel on each of those occasions when there has been an exceedance measured at any particular monitoring station, nobody has been exposed to carbon monoxide - sorry, no motorist has been.

The Hon. JOHN RYAN: Well, I do not think it matters whether you are a motorist; you only need to be human, don't you?

Mr WOODWARD: Yes, indeed, I understand, but there may be an occupational health and safety

issue with some people working there, but no motorists or passengers, as I understand, have been exposed to that. Importantly, the more conservative measure that we have jointly taken to date has been to use the trigger as whenever there is an exceedance at any one monitoring station and that is where action has been taken in relation to every one of these incidents. The eight incidents that have been referred to are all occasions where there has been an exceedance just at any one of the monitoring stations. What has been recognised is that a better measure would be trying to relate any person's exposure to carbon monoxide and that means you actually start to have to work out the speed of people travelling through the tunnel and the exposure of monitors and there is some work going on to see if that can be determined.

The Hon. JOHN RYAN: Why would you go to that? As I understand, there are only about four monitors in the tunnel, so we are talking about a measurement which applies to something in the order of a kilometre in distance, or could apply to up to a kilometre in distance. It is not inconceivable that there will be people in the tunnel for a period of time in excess of 15 minutes for whatever reason. At most times people drive through the tunnel, that is true, but, given that there have been eight exceedances already, it clearly happens, and the issue is whether a person might be exposed to that for 15 minutes. It is not hard to see how that might happen, for example if you are in an open vehicle, a sports car with its roof off, you would clearly be exposed for more than 15 minutes in the event of a traffic jam. Why is it relevant to average it out and provide a more watered down standard than the measurement that it is an exceedance and a breach if that level is reached, because it is going to be very, very difficult to measure, unless you have videotapes of who was in the tunnel at the time, and it may well be a person who cannot be identified.

Mr WOODWARD: Well, the way it is being responded to at the moment is the more conservative approach. If there is that exceedance measured at any single monitoring station then action is being taken at the moment and that action relates to anyone, whether they are stuck in the tunnel, working there, driving through or whatever.

The Hon. JOHN RYAN: But it is not considered to be a breach, is it? It is measured as an exceedance but it is not considered to be a breach.

Mr WOODWARD: Well, the action that is being taken is to ensure that that will not be exceeded. If it is a breach or not a breach, in essence what we are saying is that if there is an exceedance at any particular monitoring station then action is taken and that action can escalate from a warning right through to prosecution action, that full range of responses is available.

The Hon. JOHN RYAN: So what you are saying to us is, if those exceedances continue, it will be considered, as far as the EPA is concerned, that the operator has not met their requirements and that it would be appropriate to at some stage take legal action against them to breach them?

Mr WOODWARD: Well, I cannot speak on behalf of the enforcement of it because, as I said, it is a consent condition and Planning would be much more appropriate to talk in terms of the actual responses that they have taken in relation to those and what responses may be taken in terms of hypothetical further breaches.

The Hon. JOHN RYAN: I wanted to get your reaction to a comment that I understand was made by one of your staff. I will come back to it when I find the reference to it.

CHAIR: Ms Finlay, do you recall being at an M5 East meeting on 4 July with Mark Hather, Vicki Shepherd and others?

Ms FINLAY: Yes, I do.

CHAIR: I have the handwritten minutes by Vicki Shepherd, which say that the RTA wanted to delay Health attendance to the August meeting. Did the RTA explain why they wanted to delay Health coming to the meeting?

Ms FINLAY: From my recollection of that meeting it was because the air quality consultative committee was a new committee and it was felt by the RTA that maybe it would be better for Health to attend

the second meeting of that new committee. As I understand, they did actually go to the first meeting of that new committee.

CHAIR: Have these meetings ever discussed in-tunnel air quality?

Ms FINLAY: The meetings between Planning, RTA, Health and EPA?

CHAIR: Yes.

Ms FINLAY: Yes.

CHAIR: What was discussed, roughly? Was concern expressed about the in-tunnel air quality?

Ms FINLAY: The meetings were set to discuss the issues of in-tunnel air quality to see what follow-up actions the RTA was taking. Initially the meetings were actually about making sure that the reporting was timely and was in a way that we could interpret the information so that we could supply Planning NSW with our technical advice.

CHAIR: Was there any concern expressed about there being no standard for in-tunnel air quality for particulate matter, for example?

Ms FINLAY: The focus of those meetings was on carbon monoxide, so that was the main purpose of the meeting, to discuss those exceedances at monitors.

CHAIR: So the meetings have not yet discussed the question of high levels of particulate matter in the tunnel?

Ms FINLAY: No, not in my recollection, that is right.

CHAIR: I will go on to the question now of EPA condition 70, if I may. The EPA can ask the RTA to implement reasonable requirements. Would this include closing off the tunnel, for example, when the carbon monoxide went to a certain level or restricting access if it reached, say, 60 or 70? Would that be a reasonable request?

Mr WOODWARD: The condition does not necessarily specify what is or is not reasonable, so our involvement in that has been to work with the other agencies in terms of any of these exceedances, which we have done and, as Penny said, we have attended various meetings and we have talked through the various options for dealing with that. At this stage we believe that the responses to those carbon monoxide incidents have been dealt with sufficiently to not need us to actually provide any direction to anyone to do anything further than what has been done under that particular condition.

CHAIR: Are you aware that there may be a European Union standard for in-tunnel quality of 50 micrograms per cubic metre? Have you heard of that?

Mr WOODWARD: For fine particles, do you mean, or for PM10s?

CHAIR: For PM10s.

Mr WOODWARD: No, I am not aware of that but, as I said, the air NEPM that applies is 50 parts per million.

CHAIR: For ambient air quality outside.

Mr WOODWARD: For ambient air quality, that is right.

CHAIR: I am talking about in-tunnel.

Mr WOODWARD: Yes. No, I am not aware of such a standard.

CHAIR: If such a standard were to become common practice in Europe, of course it would mean some changes over there. Would that not probably mean in-tunnel filtration? If the current levels are 1500 micrograms per cubic metre on average in the tunnel and the level was set at 50 in Europe, would we tend to follow that standard?

Mr WOODWARD: I think once again we would need to identify what the actual standard is and the timeframe for the tunnel. There are some tunnels which are 20 kilometres long or longer overseas and we do need to make sure that what we are dealing with is apples and apples and not apples and oranges, so yes, we are always interested in and in fact we do follow what goes on around the world in terms of these, but if there is another tunnel standard that is being used somewhere else, then of course we would be interested in that, but we would need to make sure that it is applicable here and it is also a short term exposure because it is the short term exposure that is the area that there is no standard for.

CHAIR: If it takes an average of seven minutes to go through the tunnel and if the levels are 1500, which apparently is the case, although we do not seem to have any definitive measurement of that, that level of exposure would be equivalent to virtually the whole day's exposure at 50, would it not?

Mr WOODWARD: It is not something I can comment on. I can say that I know that you cannot always do a direct mathematical relationship between a short term exposure to such and such a level and extrapolate that out to what it might mean in terms of health impacts for a longer term, so it is not as simple as that, but that is something that Health would have to provide some more advice on.

CHAIR: It would appear from the meetings that have been held between Health and the EPA and so on that the question of the health impact of 1500 micrograms per cubic metre inside the tunnel has not even been discussed. Do you not find that rather extraordinary?

Mr WOODWARD: I think that the information that we have been able to gather from Health and from others is, once again, that there is not a standard; that carbon monoxide is the key pollutant that is the trigger and also a surrogate for other air pollutants and that there is a fairly stringent standard on carbon monoxide, and in terms of the particulates, as I say, there is not the advice from Health or the international area that there is an appropriate level.

CHAIR: NSW Health actually is saying in letters that it is concerned that people should not stay more than 15 minutes inside the tunnel for particulate reasons as well as carbon monoxide apparently. They have reached a sort of level themselves apparently - we will ask them later about it - where they do not want people to be in the tunnel for more than 15 minutes just because of particulate matter.

Mr WOODWARD: I think that is probably appropriate and conservative and is picked up by the CO legal requirement that, as I said, tends to be a surrogate for other air pollutants as well, such as particulates, so that objective is largely picked up by the CO legal requirement.

CHAIR: Do I take it that the EPA will be working on in-tunnel standards or some in-tunnel measurements because it seems to be a great big black hole right now? We have this ambient air quality and we have nothing for in-tunnel whatsoever.

Mr WOODWARD: We certainly are, and we are at the moment particularly interested in the information that will come out of NSW Health from the work that they are doing on the in-tunnel exposure of people and that is looking at the total health impact on people because, in essence, that is what people are particularly concerned about, the impact on them. Regardless of what the standard is, they are concerned about the impact on their health, and that is what the Health work is actually targeting at the moment.

The Hon. JOHN RYAN: Can I refer to what looks like an email that you sent to your colleagues in which you make the following report: Operations and Air Policy have just met with NSW Health, Vicki

Shepherd, Acting Manager, Environmental Health, who informed us that she will be advising her executive as soon as possible that, based on unexplained symptoms being reported by M5 East residents, NSW Health cannot give assurances about the health effects around any other stacks. This may mean that approval should be delayed for the cross-city tunnel and the Lane Cove tunnel. Would you like to explain to the Committee what you were reporting there and whether this has any significance to the M5 East tunnel?

Ms FINLAY: Yes, it was at the time that we were looking at the other two tunnels and so I was aware of the impact of this whole process on our review of the cross-city tunnel and Lane Cove tunnel and it was at a time when NSW Health was advising us that they would be advising the Department of Planning to have a 30 minute goal for CO in those two tunnels. So it was a comment made by Vicki in response to concerns that the residents had raised about the health effects they had been experiencing and the fact that there was going to be a health study, so that I was reporting on the information received by them and that we would need to be aware of that in terms of the advice we were starting to draw together in terms of those two projects.

The Hon. JOHN RYAN: Further on in your e-mail you say:

At this stage Planning NSW and RTA are not aware of NSW Health's position.

Are they now aware of that and has that been discussed? Your comments have been related to in-tunnel issues. These appear to be reports about experiences of people outside the tunnel, residents who are close by. I am not sure how developing an in-tunnel standard has anything to do with reports of problems from residents outside the tunnel?

Ms FINLAY: At that time what were being reported were concerns about CO exceedances. The other thing being reported was that people were saying that they were experiencing health effects outside the tunnel. Those two events were happening in parallel. Health was responding to both and we were saying: Yes there are these two issues that need to be managed. Yes they are separate because they are actually separate health issues but they were issues that were running in parallel at the time.

The Hon. JOHN RYAN: I will read another paragraph that you have written from a briefing dated 14 June 2002:

EPA is concerned the motorway has been operating since 9 December 2001 and reporting and response systems are still being developed as well as adequate procedures for closing the tunnel when necessary. If a meeting does not proceed between Lisa Corbyn and RTA's Paul Forward with regard to licensing issues, it may be worthwhile for these issues as well as EPA's concerns about contractor performance including an apparent dilution of responsibility that goes hand-in-hand with the seemingly endless chain of subcontractors operating the motorway, to be raised.

It would appear EPA had concerns on 14 June this year on the standard, the fact monitoring systems were still being developed and that there were inadequate procedures for opening and closing the tunnel when necessary; and that these was a seemingly endless chain of subcontractors which made it difficulty to pin down someone's responsibility. Does EPA still have those concerns and if so what has been done to address them?

Ms FINLAY: Initially there were problems for RTA getting data from the subcontractors, if that is what that sentence refers to. I understand that has been rectified. My Director General was to meet with RTA's CEO about a separate issue. I referred to that as being an opportunity to raise the issue that EPA raised much earlier in its correspondence with RTA about the importance of the procedures that they had identified, including traffic management, for actually dealing with any problems that might happen in the tunnel. It was about returning to those commitments and finding out where they were up to. Yes we are satisfied RTA is responding to the CO exceedances by putting in place those strategies that would ensure that should there be any problem in the tunnel they are quickly alerted and they are able to put in place procedures to ensure people do not reach a dangerous exposure level.

Mr WOODWARD: Penny is correct; EPA did have concerns about issues inside the tunnel and reporting. As we said in the submission, the first CO exceedance we heard about was when it was captured in a monthly report rather than when it happened. We thought that was inappropriate and Penny expressed that concern. About that time I also had a senior level meeting with Planning NSW, NSW Health and RTA to

express and address those concerns. Actions were put in place. The Director General of EPA, Lisa Corbyn, wrote to the Director General of the RTA. I think the Committee has that letter.

The Hon. JOHN JOBLING: How would you describe the relationship of EPA with the tunnel operators? Could you tell us how often you physically meet with them and other bodies such as NSW Health and the RTA specifically to discuss problems of air, ventilation in the tunnel and stack emissions?

Ms FINLAY: EPA held a licence with Baulderstone-Hornibrook. At the surrender of that licence EPA did not have formal meetings with the licensee so the relationship was one with the tunnel operator—was one of licensing Baulderstone. As I understand the operator is a subcontractor to Baulderstone. We did not meet with the subcontractor to Baulderstone except at the RTA invitation to that party to any meetings with RTA, Planning NSW and health over the last year. There have been a number of meetings over last year to look at those issues but only when RTA invited BHBBegis did they attend. Our relationship with BHBBegis is a distant one; our relationship over these issues has been essentially providing technical advice to Planning NSW so they are in a position to make requirements of RTA.

The Hon. JOHN JOBLING: On the basis of that answer I draw the conclusion EPA relies on a secondary source of advice--a report of being told. Why has not EPA independently undertaken any random air sampling of in-tunnel air? If you have not, are you aware of anyone else who has randomly sampled air in the tunnel, whether NSW Health or RTA? Who conducted the tests and what results, if any, were undertaken? If so, what would be your reason for not having random sampling?

Mr CROWLEY: What happens in terms of air quality is that we get monthly reports that provide comprehensive data on ambient and in-tunnel air quality. There are separate processes in place for quality assurance of that data through the consent conditions. EPA routinely screens data it receives. We get direct data not second-hand. To date we have had no need to question the quality assurance of that data.

The Hon. JOHN RYAN: What do you mean by "screen" the data other than reading it?

Mr CROWLEY: I mean reading it, looking at it and whether it looks reliable or not, that is what we do with our own data from our own monitoring stations.

The Hon. JOHN JOBLING: This means you are totally reliant on someone else telling you something. You do not have any policy or principal action to randomly test to ensure what you are being told second-hand is in fact accurate?

Mr EISER: No that is not fully true.

The Hon. JOHN JOBLING: It is fairly “fully true”, you do not do it.

Mr EISER: Nor do we do it for any other premises we licence. We do compliance auditing from time to time.

The Hon. JOHN RYAN: How would you do compliance auditing in the tunnel?

Mr WOODWARD: There is monitoring conducted from the stack in the ambient area and there is monitoring in the tunnel itself. EPA gets direct information not second-hand. The actual requirement, condition is part of the planning consent condition. EPA does not have the direct regulatory responsibility for actually monitoring that. EPA does assess the information that comes in. When Michael Crowley talked about the screening, we look at the information that is within the tunnel and look at the information that comes from emissions from the tunnel, outside as well, because there is usually a correlation and we have the reliability of the information from the monitors out in the public area. Indeed, one of those is a community monitoring station to address that very reason of getting community confidence and the independence in there. We look for those correlations.

The Hon. JOHN RYAN: That is outside.

Mr WOODWARD: As I said there are correlations. If you get very high levels outside and not inside or vice versa that would trigger us to actually start to do something.

The Hon. JOHN JOBLING: Surely you can understand the community concern if you do not randomly test you become a toothless watchdog. I am not saying the information you receive is wrong but there is no way you can independently say, as the principal regulatory body who might wish to take action—the community would wonder what you do?

Mr WOODWARD: As I said EPA has been involved in terms of assessing information, along with the community and others as well. The condition for the tunnel has been provided by the Government, the Minister for Urban Affairs and Planning. It is an issue that you would need to talk to Planning NSW about in terms of compliance with its conditions. EPA does not have a strict regulatory role.

The Hon. JOHN JOBLING: How have you tested this?

Mr WOODWARD: That is a question that will need to be added to by NSW Health and Planning NSW. It is a planning consent condition and the planning consent authority is the regulator for that condition. It is very important to say there is no reason to suggest the levels that have been measured are incorrect. In fact there is every reason to suggest they are correct based on the instrumentation that is in there, monitoring required, community involvement, collaboration requirements and indeed the fact that it has monitored excessive levels. If there was a concern they were reading incorrectly one might think there were never any exceedances shown. That has not been the case. There has been no suggestion that is an issue.

CHAIR: From evidence this morning, from people we have the talked to and evidence we have received in submissions, residents are indeed suffering quite bad health impacts as a result of stack emissions, albeit the monitoring levels do not show that they should be suffering. If we could take that as a given and the fact that there is a high level of fine particulate matter in the tunnel, would it not be reasonable request under Condition 70 for EPA to ask RTA to install filtration in the tunnel?

Mr WOODWARD: We need to rely on the advice from NSW Health on that and that is work they are doing in terms of those surveys and the concerns that have been raised by the community about the health impacts. I cannot arbitrate over the information that the community has given in relation to health issues. That really is an issue that not only needs to be addressed by health in terms of further advice but it is being addressed by health.

CHAIR: If health came to the same conclusion, under Condition 70 would EPA be asking RTA to install a filter?

Mr WOODWARD: Condition 70 is open ended in terms of reasonable requirements. I do not think I can speculate what should or should not be required out of a response that may or may not happen out of the health inquiry other than to say we would take it very seriously and we would do whatever was needed along with other Government agencies to ensure the community is protected.

The Hon. PETER PRIMROSE: Turning to page 1 of your submission I was interested in talking about air quality generally in the Sydney region. You say that in July 1998 there was a national environmental protection measure for ambient air quality, the air NEPM, based on health standards adopted in Australia. Can you explain how that was actually established and what reviews are going on at the moment into that?

Mr WOODWARD: I did cover that, but--

The Hon. PETER PRIMROSE: Yes, but because we are talking about standards I think it is important that the Committee understands how those standards are actually set and what the process is.

Mr WOODWARD: It actually goes all the way back, I think, to 1992 with the COAG agreement between the heads of all Governments in Australia to develop an agreed council of relevant ministers, not just

environment ministers but relevant ministers of all Governments across Australia, and to develop national standards that could apply across the whole of Australia for the environment. This was triggered by concerns about different standards being used in different States and some of the inequalities both in terms of health and environment and economic competition across those. That subsequently led to the establishment of the National Environment Protection Council, which consists of relevant ministers from all Governments across Australia, and that council has been going through a process of developing national environment protection measures and there is quite a comprehensive process for developing a national measure.

First of all, there was Commonwealth and then complementary State legislation introduced to all Governments around Australia to actually implement this. The whole process for developing a measure is quite complicated and takes a while because it involves a declaration to determine a measure, then a draft paper, an issues paper in essence on it, public comment with public involvement, a draft measure, further public involvement and then adoption of it and translation to the various jurisdictions to implement it. The outcome of that entire process in 1998 led to the air NEPM and that set the standards for all the States and Territories to achieve within a 10 year timeframe and that is the measure that was used as the basis for assessing this. In doing that it provided a standard for PM10s based on the best information that was available at this stage.

It recognised that there was a concern about finer particles as well and the council has embarked on a process for gathering information and trying to develop a standard for PM2.5s as well and that is what led to the current discussion paper that is out at the moment with a draft measure and the draft measure, as I have said, at this stage suggests a reporting standard rather than a standard that has to be met because of the concern about insufficient information being available and that is subject to public discussion at the moment. There was a public workshop in Sydney last month and there will be another one later this month and then that closes off, so comments need to go back to the Commonwealth and that will be considered again, on my understanding, somewhere around April or so next year.

CHAIR: Would it be acceptable at some point for the Committee to ask some questions on notice?

Mr WOODWARD: Indeed.

(The witnesses withdrew)

SUSAN MARY HOLLIDAY, Director General, Planning NSW, 20 Lee Street, Sydney, affirmed and examined, and

MARK DAVID HATHER, Director, Major Infrastructure Assessment, Planning NSW, 20 Lee Street, Sydney, and

SAM HADDAD, Executive Director, Sustainable Development, Planning NSW, 20 Lee Street, Sydney, sworn and examined:

The Hon. JAN BURNSWOODS: Chairman, in light of the fact that many members of the Committee have meetings at 4 o'clock, which was our scheduled finishing time, could I ask your intention?

CHAIR: Yes, I am sorry that we are so late, but unfortunately the last opening statement took half an hour--

The Hon. JAN BURNSWOODS: With respect, we went well over half an hour later than the scheduled time.

The Hon. JOHN RYAN: We are going to waste a lot of time having an argument about being late.

CHAIR: I would like to apologise that we are late and I hope you accept our apologies.

The Hon. JAN BURNSWOODS: This really is important.

CHAIR: I am trying to ask our witnesses, who have so graciously come before us, whether it would be possible to go over, say, 20 minutes or so?

Ms HOLLIDAY: My statement, which is a summary of the submission we have provided to you, takes between eight and ten minutes.

The Hon. JAN BURNSWOODS: Could I suggest perhaps that, if you are willing, if there are as many questions as there were with the previous witnesses, you might say "I will take that on notice" and it can be done that way, because we are scheduled to finish at 4 o'clock.

Ms HOLLIDAY: We certainly will do that. We will be very brief when we can.

CHAIR: We are not trying to rush you. This is a very important inquiry, as you well know, and we are not trying to rush you. If we have to stay an extra 20 minutes, if you are available, that would be wonderful.

The Hon. JAN BURNSWOODS: Well, we have the matter of a quorum.

CHAIR: Some members are prepared to go on, so we have more time. Are you conversant with the terms of reference of this inquiry?

Ms HOLLIDAY: I am familiar with them.

Mr HADDAD: Yes, I am.

Mr HATHER: Yes, I am.

CHAIR: If at any stage during your evidence you should consider that, in the public interest, certain evidence or documents you might wish to present should be heard or seen only by the Committee the Committee will consider your request, but it may be overturned by vote of the Legislative Council. Do you wish to make an opening statement?

Ms HOLLIDAY: Thank you, Mr Chair. We have, as you know, prepared a submission for the Committee and I am going to summarise the key elements of that. We are very pleased to participate in the Parliamentary inquiry into the M5 East ventilation stack and I am going to highlight key points in my submission.

As we indicated in our previous appearances, the M5 East is of strategic importance in terms of providing accessibility to the growing populations in employment areas of south-western Sydney. The project has brought significant benefits to many suburbs, particularly with respect to traffic relief and associated air quality improvements. It has removed a significant proportion of traffic, particularly heavy traffic, from local streets in the Kogarah, Rockdale, Arncliffe and Bexley areas. In particular, the level of heavy vehicles using Forest Road has dropped by 75 percent and Stoney Creek Road by over 60 percent. Many local roads have also benefited with traffic reductions of around 30 percent on Moorefields Road, Bardwell Road, Forest Road, Bay Street, William Street and many more. We, as an organisation, are committed to ensure ongoing compliance with all of the Minister's conditions of approval. We are also committed to addressing ongoing community concerns where and as applicable.

In terms of external air, since the tunnel began operation in December 2001, apart from bushfires and a recent significant dust storm, there has not been a single exceedance of external air quality goals as specified under the conditions of approval. The results of recent before and after external air quality monitoring have confirmed that the stack has had little impact on the external air environment. This minimal impact also needs to be considered in the context of very significant and tangible air quality benefits to a significant number of people living adjacent to the roads that previously were subject to very detrimental traffic conditions. Planning NSW is very aware of localised community complaints about air quality, including reports on deterioration of health, fumes and odours, by residents living close to the stack and I understand that NSW Health is continuing to investigate those complaints and has not finalised its report. It should be noted that, under condition 73, clause 5 does provide ability for any resident with a legitimate complaint to ask for specific localised air quality monitoring. However, to date, Planning NSW is not aware of any resident requesting or taking up this offer.

In terms of internal air quality, the in-tunnel air quality goals set are arguably the most stringent in the world. Nonetheless, Planning NSW is very concerned about recent issues with respect to in-tunnel air quality and is aware that carbon monoxide (CO) levels inside the tunnel have exceeded World Health Organisational targets of 87 ppm - and my experts will help you with that - on eight separate occasions. Of the eight incidents, five were due to instrument problems, one due to an accident inside the tunnel, one due to an accident on General Holmes Drive and the most recent in August is the operation's failure to comply with internal response procedures. Planning NSW together with the RTA, the EPA and NSW Health have been investigating these incidents. Planning NSW has written to the RTA requiring a number of actions to be adopted as a matter of urgency to address the in-tunnel problems. We have raised with them appropriate monitoring of exposure times, strengthening reliability of instrumentation, additional CO monitors inside the tunnel, improved reporting procedures for in-tunnel conditions, strengthening of reporting requirements of peak exposure levels and, for occasions of long periods spent in-tunnel, monitoring of portal emissions and strengthening of traffic management measures during incidents in the tunnel.

We are advised RTA is working through those issues and has undertaken a number of steps already. These include the appointment of a new General Manager on the contractor's management team, additional training for control room and road patrol staff, installation of traffic signals at the tunnel portals and the phasing of Marsh Street traffic signals to minimise congestion in the tunnel particularly during incidents, a revised ventilation protocol to improve air circulation and lower threshold response triggers and a review of the incident response procedures and associated operational and procedural changes.

The Hon. JOHN RYAN: When was all that put in place?

Ms HOLLIDAY: In the last few months. I will come to that in just a minute. In terms of in-tunnel CO goals, as indicated there have been eight incidents of levels above 87ppm. As the condition specifically references a World Health Organisation goal the objective of the condition would logically relate to a person's exposure over a fifteen-minute period. However, it is recognised that this is dependent upon there being

sufficient information to assess a motorist's exposure. At this stage the evidence suggests that it is unlikely any motorist would have been exposed to CO levels above 87ppm for longer than fifteen minutes. However on 22 and 23 August 2002 RTA staff and contractors were exposed to CO levels above 87ppm possibly for over one hour. I am assured RTA is taking this matter very seriously and I understand operating procedures since that incident have been significantly upgraded.

Despite some media reports Planning NSW has not RTA to intentionally close tunnel lanes solely for in-tunnel air quality management. Advice in a recent letter to RTA about consideration of tunnel closures was to minimise the chance of any motorist being caught inside the tunnel for longer than fifteen minutes. This would generally only occur during emergency and accident situations and was not intended to be used as a general air quality management practice. An obvious question is whether a filter in the M5 East tunnel would have made any difference to the occasions when CO levels were above the limits. The simple answer is "No" and further details have been provided in the Planning NSW submission.

In terms of portal emissions terms of conditions of approval require portal emissions be avoided as far as practicable. As far as practicable is to allow portal emissions on an absolute needs basis such as during emergencies and accidents. Not to allow such could potentially jeopardise the health of emergency personnel or motorists either trapped or required to be inside the tunnels for extended times. Planning NSW is aware there have been a number of unplanned lane closures involving portal emissions. Details are subject to what the RTA quote as a commercial in-confidence claimed privilege, however the RTA advised the incidents of unplanned lane closures on M5 East has been comparable with such closures within the Sydney Harbour and the Eastern Distributor tunnels; and we are satisfied those lane closures are only related to accidents or such incidents.

Notwithstanding Planning NSW has been advised by RTA that based upon four months of data the average length of time for portal emissions for each unplanned lane closure has been between fifteen and twenty minutes. Planning NSW has also been advised there have been portal emissions during routine maintenance. However I am advised that monitors outside the portals are placed there to detect minimal changes of CO with and without portal emissions on these occasions. To date the department is aware of one only clear incident of breach with respect to portal emissions. This was associated with the operator staging a breakdown in the tunnel on 12 July 2002. I am advised this involved portal emissions over two separate periods, two hours and then thirty minutes. Whilst the staging incident is considered completely unacceptable, monitoring at the portals showed no real difference outside the portal with and without portal emissions. Furthermore it appears the outcome has been to improve operational management practices.

The design of the tunnel with regard to fire and life safety requirements is essentially the responsibility of RTA and the emergency response agencies that have the design expertise in this area. I am advised the fire safety system for the M5 East was designed using performance-based fire safety engineering techniques consistent with the Australian Building Code Board Fire Engineering guidelines. This approach is recognised internationally. With respect to risks to tunnel operators during operation there are statutory occupational, health and safety requirements, which go beyond the conditions of approval and are not directly the responsibility of Planning NSW to enforce. RTA provided an early draft of its 2002 update of international adopted practice with regard to air quality to Planning NSW in early November 2002. We are still reviewing this document. Whilst it is apparent there have been improvements in efficiency of filtration technology there is still no convincing nor overwhelming evidence it is internationally adopted practice to install treatment systems for external environmental reasons.

In conclusion, since the tunnel began operation in December, apart from bushfires and a major dust storm the project has been well within the external air quality goals as specified in the conditions of approval. External monitoring, including at the community monitoring station that was established, indicates no discernible difference to air quality with and without stack. There have been eight occasions where CO levels have been above 87ppm within the tunnel. It is unlikely any motorist was exposed to levels above that for longer than fifteen minutes, which is the term of the condition. The specifics of each case give reasonable support to this. However it is clear there was a breach of the condition relating to CO on one occasion on 22 and 23 August when RTA staff and sub-contractors were exposed to above the appropriate standards.

Planning NSW in consultation with EPA has made a number of recommendations to address the in-tunnel CO issue. It is of particular note there have been no CO exceedances in the last three months since RTA put new management arrangements into effect, even though traffic volumes have been increasing. This would appear to indicate control of CO levels inside the tunnel has been improved. Planning NSW will closely monitor this. There have been portal emissions for emergency situations and for major late night maintenance requirements. The length of time for all such emissions is considered minor and would have had minimal impact on the health of the surrounding community. Planning NSW's position has always been that regional strategies and source control will continue to be integral to achieving the best quality air outcomes for the local and broader community. Planning NSW on behalf of the Minister for Urban Affairs and Planning is committed to ensuring on going compliance with all the Minister's conditions of approval. We are also committed to addressing on-going community concerns where and as applicable.

At pages 6 to 8 of our submission we have reported on the implementation of the Committee's previous recommendations relevant to Planning NSW. Attachment 1 of our submission details the current status of the implementation of conditions of approval relating to air quality.

The Hon. JOHN RYAN: I take you to the issue of CO levels within the tunnel. Initially your standard in Condition 70 reads:

The goal of 87ppm is not been exceeded under conditions.

This appears to have been changed, in order for there to be a breach someone has had to be in the tunnel for 15 minutes. Is not the purpose of the standard to ensure the tunnel is operated so that that possibility will never occur, not that a breach occurs when it does? Even if the tunnel is free-flowing there will be dozens of occasions where motorists might leave their car or fill their car, using their air-conditioning system with the contents of what is in the tunnel in their own vehicle then shut it off because they feel they have a vapour and they can take that air quality with them for any length of time. Should not the standard actually be as it reads?

Ms HOLLIDAY: Are we talking about the same condition?

The tunnel ventilation system must be designed and operated so that the World Health Organisation fifteen-minute carbon monoxide goal of 87 is not exceeded under any conditions.

Are we reading the same condition? So you accept the condition reads it is about a fifteen-minute goal?

The Hon. JOHN RYAN: It may be about a fifteen-minute goal but it is unusual for a regulator to only find a breach when someone has been injured. Usually the regulator operates to ensure the breach never occurs.

Ms HOLLIDAY: Of course, Planning NSW would agree it is of concern, any exceedance whether it is affecting a motorist over a fifteen-minute target or at all. That is of concern but the World Health Organisation goal is very clear. That is the goal we have adopted in our condition. That is more stringent than the goals set for tunnel operations in many other countries.

The Hon. JOHN RYAN: I do not think of the World Health Organisation intended regulators to actually find victims before they found a breach. Are you not supposed to operate the tunnel so there will not be a victim so any exceedance presents a possibility that there will be a victim? So you want to operate the tunnel so there are no exceedances then there will be no victims?

Ms HOLLIDAY: Yes that is desirable. Fifteen minutes at that level does not lead to a victim. The condition is not structured around quote victims— that is important. This is a goal set by the World Health Organisation. I have indicated clearly we would like the tunnel to operate with no exceedances above that level at all for however long it might affect anybody whether it be an RTA staff member or a motorist passing through the tunnel. That is certainly the goal.

The Hon. JOHN RYAN: If someone is exposed for more than fifteen minutes according to the World Health Organisation they have been over-exposed to carbon monoxide.

Ms HOLLIDAY: No, it is very clear in the condition that we want the tunnel to operate such that that does not happen. We would also like the tunnel to operate such that 87ppm does not exceeded for one minute, two minutes or three minutes. The condition is very clear. It is not about victims, it is about a World Health Organisation goal. You are putting it in a very emotional way. We are not talking about victims.

The Hon. JOHN RYAN: What happens if a monitor within the tunnel shows that goal has been exceeded?

Ms HOLLIDAY: Then the condition is breached. We have indicated the condition has been breached on one occasion.

The Hon. JOHN RYAN: Why would not an exceedance be a breach, given that as soon as an exceedance occurs a person might get out of their vehicle and be exposed? RTA cannot consider it their good luck there was not a breakdown or there was not someone using a motorcycle in a traffic jam, or that they did not fill their car with the air. Surely a breach should be an exceedance because you cannot measure anything else?

Ms HOLLIDAY: I think you are suggesting the condition is wrong. You are saying the condition should have said, "any exceedance." We require the RTA to report to us any exceedance. They have been doing that. We have received reports of eight exceedances. However the condition is structured around the World Health Organisation goal. That indicates an exceedance is a period for any motorist or other person in the tunnel for fifteen minutes. We can argue about whether or not if they exceed the condition they are in breach. They have been in breach on one occasion. They have exceeded 87 on eight occasions and they have reported in accordance with the condition.

The Hon. JOHN RYAN: How does the Department of Planning carry out compliance monitoring of the monitors in the tunnel to ensure that the information being given is correct and is it the Department of Planning's job to do that or is that something which is meant to be done by the EPA?

Mr HATHER: We get monthly reports of CO and I guess, in retrospect, that is too short and we have corresponded back to the RTA saying we now want to see any exceedance over 87 within 24 hours. We seek advice from the EPA in terms of technical details. Monitoring stations have been established appropriately through normal accreditation processes and I think the fact that we have actually got eight reports of exceedance is telling us that they seem to be fairly effective in telling us when there are levels over 87.

The Hon. JOHN RYAN: Has the Department of Health communicated to you that they are concerned about unexplained symptoms being reported by M5 East residents and have they indicated that they cannot give assurances about the health effects found around any other proposed stacks within New South Wales, particularly the cross-city tunnel and the Lane Cove tunnel? Does that report from the Department of Health have any impact on what you are doing about regulating the M5 East tunnel?

Ms HOLLIDAY: There are two questions there, Mr Ryan. One is: Are we aware that there have been health effect reports by residents living in the area of the M5 East.

The Hon. JOHN RYAN: No, I meant has the Department of Health communicated that to you in a formal fashion?

Mr HATHER: Health has indicated verbally that they have had some 80 individual complaints about health in the area and that they are undertaking some investigation to see what the issues are around that, but it has only been verbal advice at this stage.

The Hon. JOHN RYAN: Is that having any impact about how you monitor or regulate the operation of the tunnel?

Ms HOLLIDAY: We were talking earlier about internal air quality. Those sorts of reports are emerging from concerns expressed by the residents about external air quality. Certainly, as I mentioned in my

submission, we are extremely concerned about those reports and we are working very closely with the EPA and NSW Health about responding to residents' concerns. I mentioned in my submission that there is a condition that if a resident was particularly concerned about a specific monitoring station outside their house they could activate that condition, which is condition 73, clause 5. To our knowledge, that has not yet been activated by any individual resident. I think we are specifically rigorous about ensuring that the information on the external air quality environment is carefully reviewed and monitored and, as you know, there is a community monitoring station. All the data from the monitoring on external air quality is indicating that there are no concerns at this stage regarding the goals, the external air quality goals, having been exceeded, with the exception of the bush fires and the dust storm.

The Hon. JOHN RYAN: If I may go back to the inside of the tunnel for a moment, any person driving through that tunnel after a peak period or during a peak period can obviously observe that you can just about cut the air with a knife in some sections of that tunnel. Although the Department of Planning only has the requirement to measure carbon monoxide levels, it seems not unreasonable to wonder whether air of that quality is not going to have some health impact on someone who might be driving through the tunnel, particularly if they are protected by nothing more than a helmet or if they are in an open vehicle or if they ingest it in their vehicle system. Is it appropriate that some standard needs to be set for that tunnel, or some other, with regard to what appears to be a pretty obvious environmental problem and to some extent, as I understand it, this particular tunnel is unusual in that it is quite long by world standards and it is ventilated at one point, and that does appear to give special reasons for that being a particular concern and there being a need for a response from a regulator.

Mr HADDAD: I agree that, irrespective of the conditions and any specific requirements, it is obvious that conditions within that tunnel are not, I suppose, pleasant, in a sense, broadly speaking, relevant to any other tunnel and it is a matter that we have brought consistently to the attention of the RTA and others. We have been following it; we have been asking questions; we have been looking at what can be done to address it. We have been learning a lesson from it in terms of assessing future tunnels and seeing how we can prevent that. As a minimum, including any potential impacts and so on, the first thing as professionals that we need to do is to stop and look at how we can prevent it in any other piece of infrastructure, but nevertheless, in terms of the M5 tunnel, we have been consistently following it with the RTA to see what can be done, what should be done in terms of improving the broad conditions, irrespective, I must say, of complying with CO conditions, whether we should look at particulate standards or any other standards. You are right, it is not an easy matter in terms of specific conditions applicable to that tunnel and you are absolutely right that at the time of our assessment our attention was on external environmental conditions because we were very much concerned about the community, community concerns expressed to us consistently, and rightly so, about external conditions and probably there should have been much more done in relation to the internal conditions. That is a lesson that we have learned in terms of our assessment of future tunnels, as will be evident in due course.

The Hon. MALCOLM JONES: Under condition 72 you make the point of saying that monitoring of organic substances is taking place at sites T1 and T3. Would it not be a relatively simple operation to also monitor similar substances inside the tunnel?

Ms HOLLIDAY: We will take that question on notice, if we may, and seek some advice from our technical experts at the EPA. Certainly there are monitoring stations within the tunnel and they are monitoring CO conditions within the tunnel.

The Hon. MALCOLM JONES: These are other gases.

Ms HOLLIDAY: Yes, and you are suggesting that we might supplement the monitoring equipment within the tunnel to test for additional substances and we will take that on board.

CHAIR: Including benzene, 1-3 butadiene, formaldehyde and acetaldehyde?

Ms HOLLIDAY: Those are indicated in condition 72, so we will take that on board and give you a written response to that.

The Hon. MALCOLM JONES: You said in your presentation that there are no international practices for fitting filters for external environmental reasons. Has Planning NSW considered fitting filters for the internal environment of the tunnel so that, by cleaning the air inside the tunnel, not at the stack, you do not have to blow so much air out?

Mr HATHER: Yes, we have. The main driver, though, in terms of internal air quality in terms of the conditions has been CO. That has been the greatest indicator in terms of compliance, in terms of airflow. If we had a filter in there, yes, it would improve visibility; yes, it would reduce particulates, there is no question about that. It would not address the CO problem.

The Hon. MALCOLM JONES: I did not mention the CO problem. The question was about the overall cleanliness of the air. You spoke about external environmental reasons and I am talking about internal environmental reasons. CO is a component, but it is not the only component. The suggestion is that by cleaning the air inside the tunnel, because you are taking it right from one end to the other and then back again and then another 800 metres before it reaches the outside, if you cleaned it in transit you would not have to then expel 900 cubic metres a second because it would be that much cleaner.

Mr HATHER: My point still actually stands. The actual volume of air is driven by the CO levels, so you may in peak conditions still need to expel the 900 cubic metres.

Ms HOLLIDAY: You are implying that, because there is the haze in the tunnel, the haze constitutes a detrimental environmental situation.

CHAIR: Absolutely.

Mr HADDAD: We had not considered at the time of the assessment the filtration of the tunnel in-tunnel as an option because we were looking at broader options than that. In a sense, even if we considered it now, although we have not put our minds specifically to this question because we have been driven by CO as the main determinant which is driving the particulate issue behind it, even if we put in filtration, the volume of air will be the same as what is determining the CO criteria, the parameters.

The Hon. MALCOLM JONES: Are you sure? I mean you have not considered it. Are you sure, because if you dealt with cleaner air then you would not have to expel so much of it?

Mr HADDAD: I am almost sure in this case that the volume of air would be the same, but I am more than happy to give much more information in that regard.

Ms HOLLIDAY: I think we will take your question on board. I think we are perhaps talking at cross-purposes and we should not be.

The Hon. MALCOLM JONES: Condition 73, clause 5, talks about methods for local complaints about air quality impacts from the stack. Are you aware that nobody knows about that facility in the general public?

Ms HOLLIDAY: No, we are aware that the local community have gone through the conditions with a fine-tooth comb and they know every single element of the conditions. Not only have we explained it to them, but also they are extremely articulate, intelligent people.

The Hon. MALCOLM JONES: That is not my advice.

The Hon. JOHN RYAN: They do know the rules.

Ms HOLLIDAY: I think they do. We also have put all the conditions on the web site. We have tried to write the conditions in as plain English as the lawyers would allow us to.

The Hon. MALCOLM JONES: Before the stack was built there were serious concerns about health

because of the height of the stack below the level of surrounding residences. This is the third inquiry that we have had into this facility. We have received evidence this morning of people's health deteriorating. We have received evidence this morning of people's lives being seriously impacted detrimentally because of the emissions from the stack. We have received evidence that when the wind blows in certain directions there are smells of fumes of vehicles and burnt rubbers. Would you accept that the planning process has failed because of the evidence we have received this morning? It was anticipated in advance and it has come to fruition.

Ms HOLLIDAY: No.

The Hon. MALCOLM JONES: Are they telling lies?

Ms HOLLIDAY: No I am not suggesting that for a minute. The planning process intervenes with a particular proposal such as this tunnel. In lots of ways we do not have any evidence of the health conditions for those many residents living on those many streets, where the air quality prior to the introduction of the tunnel was presumably the major issue.

The Hon. MALCOLM JONES: That was one of the questions asked this morning about deteriorating levels of individual people's health since the opening of the tunnel not: Have you always suffered a bad health.

Ms HOLLIDAY: We are talking about different people; I understand that. Some people who were detrimentally affected prior to the tunnel operation are not here today to give evidence. We are very concerned. Their health is not our expertise but we believe conditions we have imposed through our assessment have gone very far towards ensuring that we can monitor the air quality before and after the tunnel; we have provided them with a community monitoring station which they have access to 24 hours a day. We have done everything possible to ensure the data, the facts are there; and the facts indicate the external air quality has not significantly changed from before to after. I am not saying for a minute there are not going to be some people whose health has been detrimentally affected, whether it is as a result of the tunnel or not. RTA through their Minister has offered to purchase homes within a particular radius of the tunnel and individuals have the opportunity to exercise that right.

It is very difficult for you to put to me that those conditions are either not adequate or that the assessment and the facts that have been obtained as a result of the stringent monitoring that have been imposed are lying. Given the facts say the external air quality has not changed I do not think we can say the tunnel is necessarily the course of some of the information put on the table this morning.

The Hon. MALCOLM JONES: When the tunnel was proposed in a valley lower than the surrounding homes health problems were anticipated, which have come to fruition, from a community who would assume that the planning process is flawed. We are receiving conflicting evidence from people, who we would assume to take advice from, we keep going around in circles on the advice and come back to the same premise: People were scared about the introduction of the facility for health reasons. We have construction of the facility and therefore it could have been built differently. The very fact the stack was built in a valley--blind Freddy could have done better than that.

Ms HOLLIDAY: I do not know there is anymore I can add to my statement. I accept that is a legitimate perspective.

The Hon. JOHN RYAN: Mr Haddad, you told me in the future it would become apparent there would be changes to visibility standards inside new tunnels. Does that mean Planning NSW is currently working on a standard for visibility in tunnels that will apply to future tunnels such as the Lane Cove and the Cross City?

Mr HADDAD: I said there are lessons we have learned as a result of the operating experience with the M5 tunnel specifically in relation to the visibility issue, which relates to a number of factors, design methods, operating procedures and the like, which have benefited our assessments and advice to Governments in relation to the decision-making of future tunnels, to try to address that issue and prevent the occurrence of similar issues.

The Hon. JOHN RYAN: Are you going to have a standard for visibility in future tunnels?

Mr HADDAD: We may be recommending different standards, not necessarily additional standards, we may articulate better existing standards to address issues that you have rightly raised in terms of CO exposure and the timing of exposure and levels of triggers where we can react earlier. Issues that you have raised in relation to 87ppm or different, so that we can provide for a better margin of safety. We have already signalled to the RTA we would be interested in considering some of those approaches and standards on the M5 tunnel. This is something that is up to them, in a sense, at this point of time legislatively. As I said before, at the previous inquiry, a standard is set and a condition set and to the best of our human ability as a result of reasonable assessment addressing all the issues.

If we know conditions have changed after that obviously it is for us to say: There is no standard, let us forget about it; but it is an on-going process. That is what we have been trying to build culturally throughout our assessment. Once we have seen there are issues we have set about looking at them. We found there maybe other ways of setting standards, of expressing standards, of articulating standards. We have an ability to do that on the next proposal statutorily; but because this exists all we can do is to encourage louder, louder and louder. That is what we have done.

The Hon. JOHN RYAN: Future tunnels might have different standards for visibility?

Mr HADDAD: I hope that is how I have answered--that is exactly what we are doing. We are not talking only about future standards but also looking at the existing one. We are not walking away from the existing one either.

The Hon. JOHN JOBLING: I have heard a number of anecdotal claims about certain things happening and directions for closure of the tunnel. Ms Holliday, can you deal with directions of closure of the tunnel that have been given to the RTA?

Ms HOLLIDAY: No I indicated in the submission the media have claimed we have in some way asked the RTA to close lanes or close the tunnel, which is incorrect. There has been no direction by us to the RTA to close lanes or to close the tunnel at any time on the basis of in-tunnel air quality.

The Hon. JOHN JOBLING: Under condition 70, from an instruction dated 19 June from Simon Schubach, Acting Executive Director, Planning NSW, to Mr Gallagher, Motorways Tunnel Authority it is stated:

However it has been expressed to you on previous occasions there continues to be a serious concerned with respect to poor response time. Whilst I note the corrective actions proposed I consider these need addressing as follows:

(1) Automotive readings…

(2) Undertaking appropriate steps…

(3) Until otherwise advised implement effective traffic management measures including closing the tunnel and/or on-ramps within fifteen minutes of any single monitoring station recording CO levels inside the tunnel above 87ppm.

Is that not in fact a direction as opposed to your saying there was no such direction?

Ms HOLLIDAY: No it is not a direction, it is a letter to the tunnel operators with regard, as I mentioned, to certain incidents and we were writing to them indicating the seriousness with which we took their management of the tunnel. There is a condition relating to 87ppm over a period of 15 minutes. We are saying we wish them to improve their management operations of the tunnel and that in the event of accidents they need to do everything necessary in order to ensure people were not within the tunnel for longer than fifteen minutes.

The Hon. JOHN JOBLING: I will read a little further:

This requirement must be implemented within three months of the date of this letter. Any alternative to closure of the tunnel and/or on-

ramps must be supported by detailed assessment confirming the effectiveness and the ability to meet the timeframe as shown below.

Is that is not a direction "this requirement must be implemented"? Clearly Mr Schubach, in a letter to Mr Gallagher dated 19 June, has given a direction 100 percent in contravention to the information you have given this Committee. I table a copy of the letter. I draw your attention to a letter dated 12 September to Mr Forward, which details:

Whilst appreciative of response actions being undertaken by the RTA to address the above and apparent improvements in operational procedure, it is essential that a strict implementation regimen be adhered to. Based on a review of past events and numerous and on-going discussions involving EPA, NSW Health and RTA, Planning NSW considers that it is essential for the following actions to be adopted as a matter of urgency.

I am sure Mr Haddad will recognise his own letter. I will table that. It would seem we have two letters that are very explicit and very straightforward.

Ms HOLLIDAY: I interpret “direction" differently to you. Both those letters address circumstances where we are giving the administration of the tunnel very clear indications as to what to do.

The Hon. JOHN JOBLING: It is a direction; it is not an indication. You do not say: You may do this. If you wrote to one of your staff and say, "this is a direction", they do not have the freedom and license to wander off as they will, to ignore or not act on it?

Ms HOLLIDAY: Certainly in the first letter that you are referring to--I have not had a chance to read the second letter--I am asking the management to do something if and when the circumstances arise. It is very clear.

The Hon. JOHN JOBLING: You gave them three months to have that operational.

Ms HOLLIDAY: To improve their operational management of the tunnel in circumstances where they form a judgment that condition No 70, which relates to fifteen minutes at 87ppm, is likely to be breached. I have given them certain options, including at that point closing a lane or the tunnel in order to get people inside the tunnel out within that period. That does not constitute a direction to me. If that constitutes a direction to Mr Jobling I accept his interpretation of that a letter; but that does not constitute a direction to me. If I said: You must close the tunnel within three months; or: You must do this; that is a completely different circumstance. I strongly believe what I am doing in that letter, through Mr Schubach who was acting for Mr Haddad, was to put on the table some initiatives that they needed to take into account if they were going to clearly comply with condition 70; which obviously I was directing them to do.

The Hon. JOHN JOBLING: If you directed them to do it, in my understanding of the English language - and I apologise if my understanding of the language is poor - it is clearly a direction that you have instructed them to do something. There are no ifs, no buts, and no maybes; within three months it must happen. It was followed up by a further letter from Mr Haddad in September that made the matter, in my mind, perfectly clear. Therefore, I would put to you that what a reasonable person - and it is quite recognised in the normal bureaucracy and in the legal terminology - would deduce from those letters is that it is quite clear that you have directed them to do something.

Ms HOLLIDAY: I have directed them to comply with condition 70. I have not directed them to close the tunnel.

CHAIR: On the question of the ambient air quality standard being 50 micrograms per cubic metre, inside the tunnel we understand that the readings are, on average, about 1500 micrograms per cubic metre. We understand from the RTA that it takes up to seven minutes to pass through the tunnel.

Ms HOLLIDAY: On average.

CHAIR: Sometimes longer, but say seven minutes on average. In that case, if a person were to go through that tunnel twice a day, let us say a motorcyclist or someone who leaves their window open, they

would be exposed to an additional 15 micrograms per cubic metre. If the current ambient air quality were, say, 45 and they were to go through the tunnel twice a day, backwards and forwards, their exposure would be 60 micrograms per cubic metre. There is no standard for in-tunnel quality at all. The mathematics quite clearly shows that people are being exposed, over and above the ambient air quality, merely by travelling through the tunnel twice a day. What is the Department of Planning going to do about that?

Ms HOLLIDAY: I think we will take that on notice.

Mr HADDAD: We are happy to take that on notice. However, I am having a bit of difficulty in terms of direct comparison between ambient air quality standards and, say, occupational health and safety standards where people are working for eight or ten hours or whatever over a period of time and they have been exposed to different conditions versus people who are travelling once a day or once a week.

The Hon. JOHN RYAN: Most of us do go through it twice.

Mr HADDAD: Twice, and being exposed twice under different conditions. We do not have the specialist knowledge to be able to correlate those under all the different conditions. It may well be that we have to put our minds to an appropriate standard to cover everything. The standard that we are relying on is the WHO standard.

CHAIR: We are talking about particulates, not CO.

Mr HADDAD: Well, I am talking about CO and it may well be in terms of particulates. I am not aware of a standard that has been able to correlate short term versus long term of particulates at this level, at the transient level.

CHAIR: But you understand what I am talking about, that there is a 24 hour average. Even going through in seven minutes one way and seven minutes the other way, it is a 24 hour average at 60 as opposed to the ambient air quality outside being 45, so you would be exposed to an average of 60. That is what I am saying. We have heard evidence that the particulate matter within the tunnel, which is mostly diesel particulate, 80 percent of that is PM2.5s or less, which is much worse than PM10, as you well know, and the ambient air quality is much less than 80 to 90 percent, so in fact they might be exposed to the equivalent of something like 70, 80 or 90 micrograms per cubic metre instead of 45 or 50. What I am saying is that the air quality in the tunnel poses a serious health risk to people going through it, whether it be motor cyclists or people in a vehicle with the top down or people sucking in air through the air conditioner, so I really think that the Department of Planning, working with the Department of Health and the EPA, needs to look very seriously at the problem of the particulate matter within the tunnel, not just carbon monoxide which is being addressed, but there is a great big black hole when it comes to particulate matter in the tunnel which has not been addressed.

Ms HOLLIDAY: We will take that on board.

The Hon. JOHN JOBLING: It is a major concern, particulate matter less than 10, and you get a cocktail of 2.5 down to .1 and less. It is accepted medically that there are potentials of carcinogens and I suggest that what in fact you potentially have is the basis of what many workers in the asbestos industry many years ago had. It didn't hurt you much once, but if you go through twice a day times five days a week, at the end of a period of time, is there the potential for mesothelioma from this? I would support the Chairman in suggesting that this should be looked at urgently because particulate less than PM10, and its long-term cumulative effect in deep lung therapy, once it is there does not come out easily. Might I suggest that you should insist, as a matter of course, that this should be undertaken urgently?

Ms HOLLIDAY: I have indicated that we will take that on board.

CHAIR: May I refer you to page 16 of your submission. It says in the second paragraph there are around 24 or so tunnels in Japan that have filters. We have heard evidence today that, of the 60 long tunnels in Japan, 41 have filtration, some for poor visibility, some for environmental reasons, not 24, so I think that

figure might be out of date. In the penultimate paragraph it says it could be argued that installation of treatment systems for in-tunnel conditions could be considered as internationally adopted practice where relevant to the local conditions, albeit most are not currently operating. That is simply not true. This is saying that, of the 24 Japanese tunnels and the four or five in Norway, most of these are not operating. Whoever wrote this has the information wrong.

Ms HOLLIDAY: I am not in a position to argue that point with you. Obviously we are giving you the facts and the best information that we have. I hear what you say and we will ensure that we try and bring our information up to date.

CHAIR: Maybe you would like to get someone to actually correct the misinformation.

Ms HOLLIDAY: Well, perhaps we could have access to the information that you have received.

CHAIR: Well, what you are saying is that of 24 of the tunnels in Japan the majority are not operating, so if you have information that shows that of the 24 tunnels in Japan that have filtration most of those are not operating, I think we would like to know about that.

The Hon. JOHN RYAN: I think what someone suggested to the Committee in other evidence is that evidence relating to a number of Norwegian tunnels has been extrapolated across to the Japanese tunnels and in fact in Japanese tunnels they are not only installed but operate regularly.

Mr HADDAD: Well, I suppose we can table the information that we have and the source of information, we are happy to make it available, the references and all the rest of it. We undertake to do that.

CHAIR: If you have information showing that more than half of the Japanese tunnels with filtration are not working and you can document that that would be great. If you cannot document that, maybe there had better be a correction.

Ms HOLLIDAY: Sure, absolutely.

CHAIR: I think it probably refers to Norway where a couple of them are not working, but certainly two are. I think three are not working and two are.

The Hon. JOHN RYAN: I recognise that there are no other standards than for CO for in-tunnel air quality. However, the famous Drummond tunnel in Burgin, or wherever it is, does not turn on apparently because it does not reach a standard of 300 micrograms per cubic metre, so it has a standard at which it comes on and because that standard has not been achieved within the tunnel it has not switched on.

Ms HOLLIDAY: 300 micrograms of particulate matter?

The Hon. JOHN RYAN: Yes. As I understand it, our tunnel, were it to be measured, could well have levels of up to 1000 micrograms per cubic metre. Is it not reasonable to say that our tunnel seems to be somewhat different from theirs, and perhaps I am simply saying that their not using it in a tunnel where it has been installed overseas, given that our levels appear to be quite significantly over that level, is possibly an ill comparison because in fact, if their equipment were in our tunnel, it would be on almost all the time.

Ms HOLLIDAY: I think we will have to take that comment on board when we are looking at the issue that has been raised by the Chairman.

CHAIR: We have two major situations here: One is that people's health is definitely being affected, and we have been to meet them, we have heard evidence from them, we have submission after submission saying that they have been affected since the stack has been built and I cannot believe that they are all lying to us because they have documentary evidence from their doctors to show that they are now suffering when they were not suffering before, so whether or not the monitoring shows that there are not exceedances of the standards at the monitoring stations, there must be something else affecting people's health. Inside the tunnel

it is definitely dangerous. The level of particulate matter in there - and most of it is very fine particulate matter - is definitely dangerous to people's health. I think the department needs to go back and work out some system for, at the very least, monitoring - that is probably past usefulness now - to find some way of solving the problem of the particulate matter within the tunnel. We cannot fix up the CO, that cannot be captured, but particulate matter can be and there are many parts of the world where it is being done, particularly in Japan. We know that. At the same time we could help the residents with their problems. We cannot just go on blindly saying ESP does not work. It does work; it has been shown to work. We have to come to grips with this issue for residents, not only the residents in this area, not only the people going through that tunnel, but for the new tunnels, the cross-city tunnel and the Lane Cove tunnel. We just cannot keep on going with this flawed technology.

Ms HOLLIDAY: I accept the summary that you are really making is of the issues that are before your inquiry. I assume that you are meeting with NSW Health?

CHAIR: Yes.

Ms HOLLIDAY: So presumably some of the issues that you have raised you will put to them.

CHAIR: Very strongly, yes.

Ms HOLLIDAY: And the issue of us coming up with a solution for the internal tunnel - will you be talking with the RTA?

CHAIR: If they will talk to us, but yes, they will be giving evidence as well.

The Hon. JOHN JOBLING: They will be appearing before us.

Ms HOLLIDAY: We are very happy to work with the RTA, as Mr Haddad has said. We have already been talking with the RTA about the issues, both the visual issues of the internal air quality but more particularly the health and environmental issues associated with the internal air quality, but because we are past the consent phase of this particular tunnel it is something that we will need to do together with the RTA in order to ensure that the tunnel operates effectively. In other words, we will need their support; we will need your support.

The Hon. JOHN RYAN: You cannot impose it on them, you can only encourage.

Ms HOLLIDAY: In other words, at the stage that there does not appear to be a way in which we, as Planning NSW, can impose it on them, we have indicated that these are issues that we will now take into our assessment of any potential tunnel because clearly I do not think it was envisaged that this tunnel internally would operate in this way, but we are now obviously clearly aware that tunnels can operate internally in the way that this one does and we are very happy to work with the RTA as we have been and we will continue to do so, but obviously it is up to you in talking to the RTA to try and encourage them to cooperate and to work closely with us and the EPA on this issue.

CHAIR: Under condition 70 the EPA can direct the RTA to install filtration; they have that power, it is an unlimited power under condition 70. If you work with the EPA and the Department of Health, the EPA can give that direction to the RTA. If the RTA does not want to do it, they may have to.

Ms HOLLIDAY: Yes. I think we have not actually talked today about the issue of whether a filter on the stack will address the issues with the interior air quality of the tunnel.

CHAIR: It clearly would not.

Ms HOLLIDAY: So I think we are talking about slightly different solutions.

CHAIR: I think in-tunnel filtration is probably the answer we have to be looking at, not only for this

tunnel but for the other two proposed tunnels, otherwise the problem is going to go on, we will have more hearings next year, more inquiries, and we just want to get over this and get back on with our lives. People want to get on with their ordinary lives and not worry about daily pollution from this stack, just get back to being able to live normally again.

Ms HOLLIDAY: It is those two issues you have articulated Mr Chair, there is external air quality then there is internal air quality.

CHAIR: Would you be prepared to take questions on notice?

Ms HOLLIDAY: We would.

(The Hon. John Ryan moved a motion that the transcript be published. Agreed.)

(The Committee adjourned at 4.45 p.m.)