TRANSCRIPT OF PROCEEDINGS

The attached transcript, while an accurate recording of evidence given in the course of the hearing day, is not proofread prior to circulation and thus may contain minor errors.

2014 HAZELWOOD MINE FIRE INQUIRY

MORWELL

TUESDAY, 3 JUNE 2014

(7th day of hearing)

BEFORE:

THE HONOURABLE BERNARD TEAGUE AO - Chairman

PROFESSOR EMERITUS JOHN CATFORD - Board Member

MS SONIA PETERING - Board Member

MERRILL CORPORATION AUSTRALIA PTY LTD
4/190 Queen Street, Melbourne
Telephone: 8628 5555
Facsimile: 9642 5185

CHAIRMAN: Mr Rozen.

MR ROZEN: Good morning, Members of the Board. Could I just indicate that the first witness that I will call today is Dr Paul Torre, he's provided two statements to the Inquiry in his role within the Environment Protection Authority. It is intended that evidence will be led from him and that he may be cross-examined depending on the course of that evidence, and then, once that process is completed, we'll invite Ms Claire Richardson, who's the independent expert, to join Mr Torre at the expanded witness box and then there will be a concurrent session with the two of them. 10.04AM 10.05AM

It may be desirable to have a brief break while that changeover occurs, I'm in the Board's hands as to whether that would be desirable or not. Perhaps we'll play it by ear. 10.05AM

CHAIRMAN: Yes.

MR ROZEN: I'll call Dr Paul Torre.

<PAUL TORRE, affirmed and examined:

MR ROZEN: Good morning, Dr Torre. For the purposes of the transcript, can you please state your full name?---My name's Paul Torre. 10.06AM

Your work address is 200 Victoria Street, Carlton?---Yes, it is.

You hold the position of Team Leader of analysis and predictions within the Victorian Environment Protection Authority?---Yes, it's actually the Assessment and Predictions Team. 10.06AM

Dr Torre, for the purposes of the Inquiry, you have made two witness statements?---Yes, I have. 10.07AM

Can I ask you about those in turn. Firstly, you provided a

statement to the Inquiry, did you not, dated 14 May 2014?---Yes, I did.

Do you have a copy of the two statements, they should be in the folder in front of you?---Yes.

Have you had an opportunity to read through the two statements before coming to the Inquiry today?---Yes, I did. 10.07AM

I think I said it was dated the 14th; I'm looking at an earlier copy, I think it's 16 May, is that right?---Yes. 10.07AM

Sorry to mislead you. Are the contents of that statement true and correct?---Yes. There is one correction that I'd like to have, it's in Table 3.

So that's page 3 of the statement?---It's the assessment criteria should be micrograms per cubic metre rather than parts per billion. I apologise for that typo. 10.07AM

Is that for all of the entries?---Yes. So wherever there is parts per billion, it should be micrograms per cubic metre.

If we start, for example, with aluminium, I won't go through each of them, but instead of it saying 2 ppb, it should say 2 micrograms?---No, Table 3. I've got 38. 10.08AM

Are we looking at the same thing, Table 3, the first entry is aluminium?---Yes.

We've got averaging period, yearly?---Yes. 10.08AM

Working off the 16 May statement, Table 3, first entry, aluminium, currently 38 ppb, is that right?---Yes.

You would change parts per billion to read microgram per cubic metre?---Yes.

Wherever we see parts per billion, you would seek to make that change?---Yes. 10.09AM

With those changes being made - and that's just in Table 3?---Yes.

Is the statement otherwise true and correct?---Yes.

I'll tender the statement of 16 May 2014.

10.10AM

#EXHIBIT 38 - Statement of Dr Torre.

MR ROZEN: Dr Torre, before leaving that statement, and the reason I say we'll leave it is because the subject matter of that statement is the subject of a joint report that you have produced with an independent expert that's been retained by the Inquiry, Ms Claire Richardson?---Yes. 10.10AM

So, rather than asking you as an individual about those matters, we'll return to the matters that you deal with there, the standards and the like. Before doing that I'd like to ask you a little bit about your background if I could, please. In paragraph 3 of that statement, you say that you hold a PhD in Applied Science, Air Pollution. Can you tell the Inquiry what the subject matter of your doctorate was?---My doctorate was analyses of volatile organic compounds in Melbourne air. 10.10AM 10.11AM

You also hold a graduate Diploma in Analytic Chemistry as well as a Bachelor of Science in chemistry. You haven't attached a CV to your statement. Would it be possible for you to provide that to the Inquiry please?---Yes, I will. 10.11AM

In terms of your employment with the Environment Protection Authority, it goes back a while to 1985?---Yes, it does. 10.11AM

Have you held different positions within the EPA in that time?---Yes, I have, several positions.

Would you tell us briefly what those positions have been, please?---I started off as a junior scientific officer, then worked as a senior scientific officer, then worked as a Team Leader in the land and wastewater area. I was then Team Leader for the Air Chemistry Group, then moved over to the Air Quality Assessment Group, and there's been a couple of restructures in the EPA and I've come to the current role as Team Leader for Assessments for Air Quality and Predictions. 10.12AM 10.12AM

You say in paragraph 2 in your statement, in your current role you manage a group of scientists and technicians who undertake a number of such assessments of air quality; is that right?---Yes, I do. 10.12AM

I'll ask you a little bit about the resources that you have within your group. How many full-time equivalent qualified air quality specialists do you have in your group?---In my team, I have three full-time air quality scientists. 10.13AM

Is that including yourself?---I'm the fourth. We've also got - in that we've also got a program leader who oversees. The way it's structured is, I have got, there's four in my team, we also have an Air Monitoring Group where there's another five people and a couple of contractors which is being overseen by an Air Quality Program Leader. 10.13AM

Those figures that you've just given us there, that's currently as at the beginning of June 2014, were they the same as at 9 February when the Hazelwood Mine Fire started or have those - - -?---No, they were the same. 10.13AM

If we go back five years, were you in the same position at about the time of the Black Saturday Fires in February 2009? Sorry, you personally, were you managing that team?---I was in a similar team, there was a little bit of - yes, it was a similar team. 10.14AM

How do the numbers now compare to five years ago; has there been a change in the numbers, either increased or decreased or are they the same?---In terms of concentrations?

In terms of the resources you have just described to the Inquiry that are available to you, have they changed in that time?---I suspect they're very close; no, I think there was probably a few more people; there was probably about three or four more people. 10.14AM

MEMBER CATFORD: Just to understand that, three or four five years ago than you have now. Is that what you're saying?---Yes. Sorry, I'm just trying to recall. It would probably be about another three or four scientists that were in the group, air quality scientists that no longer have that role now. 10.14AM 10.15AM

Could I just ask, why the reduction?---Just the priorities that the organisation has, the environment's got a lot of challenges. Generally what we're finding is that the air quality in Melbourne and Victoria, the levels are reasonably good and most of the time meet the air quality objectives. So it's looking at trying to maximise our effort because there's a lot of contaminated land, water, obviously the regulatory role that we're doing, so it's the way that the organisation restructures and reforms to meet the demands. 10.15AM 10.15AM

So, would you say you have sufficient air quality scientists

now?---That's a good question. Me personally?
Yes, personally?---I think that - we just lost one, so it would be good to replace the air quality scientist. I think what we're trying to do is do the best we can with the resources we have. 10.16AM
Just one final question. Compared to, say, New South Wales, would you have a similar complement of scientists in Victoria?---No, New South Wales are a different - they have a much greater Air Monitoring Network system and they've just gone through a restructure themselves. I 10.16AM
suspect that they would have significantly more, just because they run a larger network, but I couldn't tell you off the top of my head, sorry, but yes, they would be significant.
CHAIRMAN: Because they have significantly more industrial 10.16AM
areas?---Yes, and I think - - -
Or mining or both?---To be parochial, they've got more air pollution problems than we have, especially in Sydney itself, they've got quite a number of issues with ozone, they've obviously got the issues with the mines 10.17AM
and coal, so the Hunter Valley, lower Hunter Valley, and I think that that's been a key issue for them to try to reduce a lot of those impacts.
MEMBER CATFORD: Thank you.
MR ROZEN: If I can turn then to the second statement that 10.17AM
you provided to the Inquiry, it's a statement dated 30 May 2014. Have you had a read through that statement before coming along today?---Yes, I have.
Are the contents of that statement true and correct?---Yes.
CHAIRMAN: Do you want to include those as a separate 10.17AM
exhibit or part of 38?

MR ROZEN: I think it could be part of 38. I tender that as part of exhibit 38.

#EXHIBIT 38 - (Addition) Second statement of Dr Paul Torre dated 30 May 2014.

10.18AM

MR ROZEN: Just a bit of background to this because this is one of the few unsolicited statements that have come into the Inquiry, Dr Torre; you've provided this to us of your own volition, is that right?---Yes, I did.

Can you explain to us the reason for doing that?---It was really because I was at the event from the beginning, in terms of from an EPA response, and it would have been informative to share my experiences and get some of the rationale behind some of the events, because the executive team did ask me to go down to the Regional Control Centre in Traralgon, I was there as a scientific officer and supporting the emergency response.

10.18AM

10.18AM

As you say in your second statement at paragraph 2, you've given some thought to the context in which your first statement dated 16 May was made to the Inquiry and you'd like to set out the context of the air monitoring assessment undertaken by the EPA since it first became involved in response to the fire?---Yes.

10.18AM

Does that summarise the rationale for providing it? I should indicate to you the Inquiry is grateful because it wasn't immediately apparent from your first statement the personal role that you had had in relation to the events down here, so it's been of great assistance to us to have your second statement.

10.19AM

10.19AM

I want to ask you some questions about your role, and you

may be aware that, whilst your former boss Mr Merritt was in the witness box yesterday, he sent a few hand balls your way about matters that he thought we might be better asking you and so I'll address those too if that's convenient to you, Dr Torre?---That was kind of him. 10.19AM

Of course. There's been a bit of that going on in this Inquiry so you're not alone there, Dr Torre. If we start at paragraph 3 of your statement please. The first day that you attended in Latrobe Valley in relation to this matter was 12 February, so that's day 3 of the fire?---Yes. 10.20AM

The Wednesday of what we're referring to as the first week. Is that right, the Wednesday?---Yes.

How was it that you came to come down to the valley? Who asked you to come down?---I attended the Executive Management Team meeting that was actually being done at Macleod, I'm based at Macleod at the Centre of Environmental Science. 10.20AM

This was an EPA management team?---Yes, and they asked me that the incident at the Morwell-Hazelwood Mine was underway and they needed to get some support from EPA, so they asked me to go down as a scientific officer to help with the incident. 10.20AM

As you say in paragraph, the role of the science officer was to provide scientific support to the emergency incident and was rotated amongst other trained scientists at the EPA as the incident continued, so you were one of several scientists who fulfilled that role during the course of the incident?---Yes, as a scientific officer. 10.21AM 10.21AM

In saying that, too, there was a team of scientists

back at Macleod providing support across whole sectors of the environment.

Amongst other things, they were there interpreting the data that was fed back to them from the various monitoring stations?---Yes, and other scientists, the fresh water scientists or contaminated ground scientists, so it was very much a coordinated team approach. 10.21AM

At paragraph 4 you say something which may seem surprising at first blush and I want to ask you about it, you talk about your area of expertise, and then in the last line of paragraph 4 you say, "EPA has very limited air monitoring equipment for measuring air emissions from emergency incidents." Would you like to expand on that, please, Dr Torre?---Yes. EPA really is not, in terms of the air quality program, it's not designed to do emergency rapid response air monitoring for emergency incidents. The air monitoring program is more about trying to assess the impact of air quality as a general issue. 10.21AM 10.22AM

There's projects where we try to understand the trends of pollution, but there's also projects where we might go out there and do some short-term issue-specific campaign air quality assessments, and monitoring's obviously a way of doing that but we try to use every tool we can. We're not really geared up for our role in this emergency response phase; we do provide as much support as we can. What we do is, we're not in this rapid response capability. 10.22AM 10.22AM

Does that mean therefore this was in your experience a somewhat unusual role for you to play?---Yes. 10.23AM

I've been in the emergency response system for

several years, in terms of providing scientific advice, yes. In terms of the air monitoring assessment and network that we do, in terms of emergency incident, yes, very unusual.

I know from the joint report that you've produced with Ms Richardson that this is one of the recommendations that you make, is it not, about the need to develop more in the way of a rapid response capability?---Yes, very much I strongly support that. 10.23AM

And that's a recommendation which we'll come back to and I don't want to steal your thunder at this stage, but that's very much informed by your experience of this event; is that right?---Yes, very much. 10.23AM

At paragraph 5 of your statement you refer to it being customary when responding to emergency incidents for EPA air quality experts to conduct an initial impact assessment. Can you explain to us what that means?---I think it's trying to understand sort of what would be the impact, where are the emissions going, what type of emissions, what type of event it is and how would you try to measure those impacts; are there any viable methods that could be deployed, it depends on the incident. You might turn up and it might be a chemical spill and you'd be looking for vapours or, as in this case here, it was a fire, so you're looking for what are the major pollutants, what are the pollutants concerned and how would you go about trying to assess that. 10.24AM 10.24AM

Do you also need to factor in any nearby population areas?---Yes, that's - - - 10.24AM

Goes without saying?---Yes, sorry.

No, that's all right?---Obviously where you're looking for, you're looking for where the impacts are and, if it's residential, people, it might be - sometimes it may be, depending on the pollutant, it might be even a catchment; you may have things drop into a catchment that may affect it, so, yes.

Your initial impact assessment here told you that north and northeast of the fire was the town of Morwell?---Yes.

And that the southern reaches of the town of Morwell were very close, within several hundred metres of the northern batters which were well and truly on fire when you arrived?---Yes.

CHAIRMAN: Could I just qualify that by raising the query whether, on the maps that we've been provided suggest that it's close to 400-500 metres between the bowling club, which of course is relevant to what you - and the area that was still burning at the time that you were there?---Yes.

MR ROZEN: Was it also part of the initial impact that the town of Morwell was going to be particularly affected by smoke from the fire dependent on the wind direction?---Yes.

That would have been immediately apparent to you?---Yes.

In particular, southwesterly winds were going to potentially have the greatest impact on the distribution of smoke through Morwell?---Yes. Can I just add on that, when I did drive down that weekend, I drove down on the 12th, the Wednesday, there was quite a lot of smoke impact; the East Gippsland bushfires were blowing smoke across the southern part of Victoria where the bushfires, be it Bendigo, northern parts of Melbourne, so there was

quite a lot of smoke around and I distinctly remember driving through Yarragon and other towns, just the saturation of smoke, you know, the visibility was poor.

We'd already been alerted to the general bushfires because our air quality forecasting team were actually looking at satellite photos and you can actually see the size of the plume and the amount of smoke, so on the 11th we were already starting to think of, issuing advisories following the processes, so pretty much evident in terms of, there's smoke everywhere. 10.27AM

So whatever smoke was coming out of the mine was over and above the general level of smoke that might have been present in the region?---Yes.

What was your initial assessment of the level of smoke in the town of Morwell when you arrived? Because we've heard differing views about that during the course of the Inquiry; you're on-the-spot, what was your assessment?---Yes, there was a lot of smoke around but it was - at the time I thought it was difficult to distinguish between the background smoke and the mine smoke. I recall, I think the winds were mainly an easterly wind. I could see smoke coming from the mine but there was generally smoke around the place. 10.27AM

I should probably have taken you to this at paragraph 8 of your statement, you do talk about the assessments you'd made before coming to Morwell - that is, on the 10th and the 11th and your awareness of the general poor quality of the air and the smoke advisories. The aerial resources you make reference to, and I think you just told us there that EPA has the ability to examine smoke plumes. Can you tell us a little about what that 10.28AM

facility is that you're talking about?---That's generally available to everyone, they're satellite images that you can download, and we look at that as a way of trying to understand the impact across a large area. It really, not only does it give you an understanding of the spatial variability of the impact, but it also gives you an understanding of the intensity of the smoke, because some of these plumes you can see, they look likely enormous clouds and that provides us the information for the forecasters with measurements and observations to put some context about those impacts. 10.28AM 10.29AM

At paragraph 8 of your statement, you describe your immediate assessment that you made, and I take it that was made after you - did you go and have a look at the mine?---I stood at the side of the road, we drove around. We had a look at the mine, I did drive around to the back of the mine just to see whether there was any more smoke going west of the mine and also south of the mine, just to try to get - I could see the plumes coming out. I think the thing that struck me the most was how big the mine was and the smoke coming out. 10.29AM 10.29AM

I think you wouldn't be alone in this room in having reached that view once you had a look at the mine, but also the amount of smoke coming out of the fire, and it was apparent to you, I take it, that there was fire burning in several areas of the mine?---Yes, you could see different plumes and you could see the smoke dispersing away. 10.29AM

Were you alone in making this assessment or were you part of a group of people?---No, I consult with the team. I 10.30AM

think one of the things about trying to undertake an air monitoring program is to consult and try to get as much resource available, and so the night before we started to think about, well, if we need to be mobilising and we need to get an assessment, what's the best way to start mobilising and deploying equipment for monitoring, so we started a whole series of events. 10.30AM

With the emergency response events you tend to go to rapid mobile monitoring systems you can apply close to an incident, so we started to try to obtain or purchase or rent an instrument that will be able to give us - because we knew it was smoke, we needed to measure particles, the focus being on PM 2.5 because it penetrates in our lungs, affects our health et cetera, so that was the main focus, how can we get monitors down there to understand the impacts. 10.30AM 10.31AM

I think what's important too is the level of smoke around the place and the advisories and people understanding, hopefully through communications, that smoke is evident and we need to take account of those potential impacts. 10.31AM

So it was all about, how do we mobilise. Fortunately what happened was we were in the process of putting in a particular monitoring, the measure being 2.5 in Traralgon - - - 10.31AM

Can I just stop you there. Up until that time the monitor at Traralgon had only monitored PM 10, is that correct?---Yes.

So you were in the process of upgrading that, were you?---Yes. 10.31AM

When was that intended to take effect - that is, that the

Traralgon monitor would have the capacity to monitor 2.5 as well as PM 10?---Yes, that was in that week or so I believe. We were working towards putting in a PM 2.5 monitor in Traralgon.

What does that involve logistically? Is it augmenting the existing equipment or is it putting in new equipment?---No, it's putting in new equipment, putting in the shelves, feeding that in. One of the challenges is making sure the data acquisition system - so the instrument measures the pollutant, it then transfers that measurement into a system that's able to collect it and then transmit that to a computer so then we can take the data, or eventually we can either put it on our website and analyse the data, so you've got that continual stream of data. 10.32AM

I think I cut you off, you told us that one of the things you were aware of as part of your assessment before coming to Morwell and once you got here was that there was steps in train to upgrade the Traralgon monitoring equipment so that it could measure PM 2.5?---Yes. We were thinking about, well, how do we - trying to access equipment to go down there, what's the best way to start operating, so the monitoring team were looking at all those options and that option was one that was available to us. 10.33AM

CHAIRMAN: Are you coming back to this question of the Tasmanian materials?

MR ROZEN: I was about to go there but now would be a good time.

CHAIRMAN: You ask your questions and I'll add to them if necessary. 10.33AM

MR ROZEN: You mention at paragraph 9 of your statement that the science team in Melbourne had organised the hire of some equipment. Do you want to just expand on that; what equipment was sought? You refer to the DustTrak equipment, can you tell us a little bit about DustTrak equipment, please?---DustTrak equipment is a device that uses a light scattering measurement technique, where basically the air from the atmosphere goes into it, a light measures the amounts of light that the detector can read, and that's basically proportionate to the light scattering, to the amount of particles in the atmosphere. So there's a slice selective inlet so it basically cuts off particles that are PM 2.5, it goes into the detector as a response that is related to that light measurement. 10.33AM 10.34AM 10.34AM

There's a couple of factors that it's really good at, it's portable. This particular system has also got an ability to log and send data remotely, and it gives you that ability to be able to apply it where we need.

There's also a lot of work done in Tasmania. The reason that we actually contacted Tasmania was that the Tasmanian EPA had done quite a lot of work in this area using DustTraks for smoke. It's an area, what we call a mono-pollutant area; that you've got one source of smoke. You can get the instrument, even though it's not directly for particles, you could come up with a measurement that estimates PM 2.5. 10.34AM 10.35AM

CHAIRMAN: Can I enquire as to the reason why Tasmania would decide to spend the money in getting that kind of equipment?---I think it's part of their Air Monitoring Network. The Tasmanians decided, which is right, is 10.35AM

that their main pollutant is smoke, smoke from wood heaters and burning from bush, so they needed a network where they could cover those places in other parts of Tasmania that could do that monitoring. What they did find was that, because smoke is a prevalent pollutant, they're able to use these more portable instruments rather than the conventional Air Monitoring Network to come up with - they do a whole lot of calibrations. 10.35AM

So, when you do air monitoring for an Air Monitoring Network you've got to make sure you meet certain standards, and even though this piece of equipment isn't a standard method, they were able to demonstrate scientifically that it was sound enough for their Air Monitoring Network, and for their needs it suited their requirements. So DustTrak - I mean for us it's about, where can we get a piece of equipment as soon as possible that we can deploy. 10.36AM 10.36AM

I was going to ask you then about the traffic blanket, but finish off what you were about to say?---We went around as many places as we could, we could only get one DustTrak to begin with, we ring around and get a second DustTrak later on, we were looking for any type of instrument that we could use that our guys were comfortable with. 10.36AM

The travel blanket - I think a blanket is a very nice name - something to talk about the baseline ambient network of Tasmanian EPA; something "T". The travel blanket is, because this device is mobile, the guy that created the system called it, it's a travel blanket, because it's the same instrument that they use in their blanket network. So what they've done is, 10.36AM 10.37AM

they've got a blanket network at the top of Tasmania and other areas to monitor these smoke impacts, and so Dr John Innis from the Tasmanian EPA had come up with this portable device you can put in a car and drive around and look at smoke. 10.37AM

What it would do is, it would go into areas where there would be a lot of wood heaters in small towns and demonstrate the impact of smoke, the way people were burning the heaters. So he came up with a way of visually illustrating those concentrations. 10.37AM

There's limitations in the equipment in terms of the measurement and what you get out of it, but they do provide you an indication of the level of particles for a short period of time, doesn't meet a standard, but it also gives you a good understanding of how the smoke's 10.37AM travelling, where it is, and you can see in gullies the way it gets trapped. So it was a good way of illustrating that and it was a way of trying to talk to residents about the way they were burning heaters and providing the evidence to change behaviours to get 10.38AM better air quality impacts.

MR ROZEN: It's probably just me, but the reference to the blanket, I think we all understand the travel idea, that it's portable, sticks out of a car and you go around. The reference to blanket?---It's the acronym, 10.38AM it's Dr John Innis who created this acronym, I can't remember exactly, it's something to do with baseline air network of, that's the "K", EPA Tasmania.

You've helped me solve one mystery, Dr Torre, and we're very grateful for that?---Really what's interesting was when 10.38AM John first came along, he came into the air monitoring

game a few years ago, I actually got an email from him when they established the blanket saying that our smoke from Victoria as impacting on Tasmania, what are you doing about it? I said, we'd like to share our resources with you. So the blanket, it's been a very - I've been very impressed with the system he's developed down there. 10.39AM

I take it that both DustTrak equipment and the travel blanket were of considerable assistance to you in fulfilling your role?---Yes. I contacted John on the way down, so on the way down we hired a DustTrak, we needed to understand what sort of calibration figures we needed to adjust the instrument to give us something, gave us estimates of PM 2.5, and John straight away said, yes. So we started having John in the loop on that first day. 10.39AM

This is the gentleman from EPA Tasmania?---Yes.

Can you give us ballpark figures, what sort of money are we talking about if one wanted to buy just DustTrak monitor, one DustTrak monitor that you used? Give us an idea of what we're talking about?---I'm not sure. About $5,000 to $10,000, $10,000 maybe, $15,000. Sorry, I don't get into purchases of equipment, but I think it's in that order. I think that that's the idea about DustTrak system, whether it's - when you get the fully blown system it may be $20,000-odd, I'm not sure, but it gives you the ability to have a number of sensors so you can get that spatial variation, so it's portable, low cost - actually it might be less than $10,000, I'm not sure - relative to a standard ambient air monitor. 10.39AM 10.40AM 10.40AM

We've heard some references, Mr Merritt yesterday was talking about the need to get indicative data which may be less than perfect to inform the initial stages of the emergency response. Can you explain to us what that means, what's the difference, what is indicative data, what's the difference from - what's it contrasted with in terms of more reliable data?---In an emergency event it's really about trying to get an indication of what the levels are, how is the incident going, how can we stop those emissions and control it. 10.40AM 10.41AM

So the indicative data is basically a measurement which is not a standard measure used for the conventional ambient air quality, doesn't meet the high standard, but there's enough information and correlation to put the equipment together to come up with a way that they're very close, so there's kind of like an uncertainty, so you adjust the data to give you estimates of PM 2.5 rather than using that conventional method. 10.41AM

Drawing on your training experience, you're confident that the DustTrak equipment, once installed at Morwell South, was providing data that was accurate enough for it to inform their response by the emergency personnel?---One of the challenges of the DustTrak data, it did give us information, it supported what we were seeing, high levels of particles. 10.41AM 10.41AM

One of the challenges with the DustTrak data was that the calibrations that the Tasmanians had done was with wood smoke and we were still wanting to get a little bit more calibration in terms of, is the coal particles reacting to this incident the same as wood 10.42AM

smoke, but it did provide very good information because we could use that against other similar measurement like the visibility reduction.

So we've got a number of different monitors that we use and what our guys are very good at is doing statistical analysis to come up with that indicative data. 10.42AM

You raised something which I was going to come to and I'll do it now and that is, the challenge that you faced in dealing with coal smoke as compared to bushfire smoke, and of course in Victoria there are quite well-established protocols for the measurement of bushfire smoke, and you refer to those in your statement. What are the differences between the smoke that was coming out of the mine fire as compared to bushfire smoke?---When I refer the difference in this particular situation it's more to do with the way the instrument is actually responding relative to the standard method of monitoring. There would be differences in terms of some of the combustion products, but generally what we tend to look for is the major pollutants of concern; so we're looking for particles. 10.42AM 10.42AM 10.43AM

And those particles are present in both bushfire smoke and coal mine smoke?---All combustion. 10.43AM

Paragraph 19 of your statement, you tell us that you confirmed on the 13th, so on the second day you were in Morwell, that the bowling club was an appropriate location to install DustTrak monitor. Can you explain to us your rationale for using the bowling club?---We wanted a station that was going to give us high 10.43AM

concentration, high impact area which was going to be representative of the community and residential area in there, but we also needed a spot which was generally open, this is just common conventional air monitoring. SO the idea was to give us something that's close to the residents, that's close to the mine, it's open and gives us a general representation of those high impact areas. 10.44AM

The map of Morwell has come up there and the bowling club is at the end of Hazelwood Road, that's about the location, isn't it?---Yes. 10.44AM

We can just see from looking at that map why you thought that was an appropriate location given that the mine is just south of that position on the other side of the freeway?---Yes. 10.44AM

As you say in paragraph 19, it was just about as close to the fire as it was possible to have a monitoring site as there was an available tract of land next door. What sort of land area do you need to set up equipment like that in?---It really depends on what you're trying to do. We're trying to get something that's representative, something that's really open, like the bowling green was really good. We like to go to places like open football grounds or spaces like that, because one of the factors is, you're trying to get a general representation of that area and when you're in sort of in located spots, you may be not getting that general representative area, so a football ground is commonly used, even a bowling green like that is really good for us. 10.45AM 10.45AM

Probably a dumb question, but does the equipment need to be

in an elevated position to take readings?---Yes, there's a standard height that it comes into, so it's generally just below breathing zone, so it's just deployed that way.

One last question about DustTrak equipment. It was obviously capable of measuring PM 2.5 and PM 10 I think you've told us, is that right, or just PM 2.5?---No, just PM 2.5. 10.45AM

What about PM 1.0 - that is, even smaller particles?---Well, normally there is PM 1, there's ultrafines, there's a whole lot of different particles. No, we focus on PM 2.5 because it can be readily measured, there's advisory standards, there's a lot of research on health impacts, there's equipment that's readily available and portable and those lower particles are part of that PM 2.5. 10.46AM

MEMBER PETERING: Dr Torre, your statement just then was that there's very well-known health impacts on PM 2.5. How long has that been well-known and what's the source of that data?---Just looking at the research, overseas there's been quite a number - recently in 2013 there was quite a big study done and an overview done in Europe and I think it's in America looking at the impacts of PM 2.5, there's been quite a lot of stuff done - this is not my area of expertise but quite a lot of epidemiological studies done on, yearly data on PM 2.5 and a lot of the work done is focused on PM 2.5. 10.46AM 10.47AM

So it is quite common knowledge that PM 2.5 is a health risk; it impacts people's lives?---It depends. PM 2.5, it's like most pollutants, we all have different sensitivities at different concentration, and the 10.47AM

literature's all over the place in terms of how it affects people and you've got sensitive people who are ill or people who are young so there's a number of different ways and it can affect it, and for healthy people, there's just different sensitivities. But there is sufficient to say it does affect people's health. 10.47AM

MR ROZEN: The recent report that you referred to, is that the one that you draw our attention to in your first statement, the review of evidence on health aspects of air pollution?---Yes. 10.48AM

That's in paragraph 22, we don't need to go to that, but that's the reference that you're talking about?---Yes, and there's also a Senate Inquiry recently on looking at particles at PM 2.5. 10.48AM

The other pollutant I want to ask you about is carbon monoxide. You make reference in paragraph 14 of your second statement to becoming aware on the 12th, on the first day that you were here, of some reported carbon monoxide readings from the mine. You say that on the basis of that you advised your science team to also hire some handheld carbon monoxide monitors and to identify portable carbon monoxide equipment?---Yes. So we needed to understand, if there was going to be any dispersion into the town, so just try to get as much equipment as we can. Ideally we were looking also for, if possible, any carbon monoxide analysers, a bit like analyser that you may use like a DustTrak, something that's portable, that can average the results, that can transmit the results to be used for data analysis. But we didn't have any luck in that space. 10.48AM 10.48AM 10.49AM

Firstly, you obviously looked to resources the EPA might itself have had, and I take it you didn't have any of that sort?---No. Like I say, our air monitoring program is pretty much focused on our air Monitoring Network and we do have standard monitors that we use to assist with any air quality objectives. 10.49AM

You were able to access some handheld CO monitors, were you not?---Yes.

That was over and above the equipment that the CFA and the MFB were using at the mine; is that right?---Yes. So the CFA have got their own system for their Occupational Health and Safety, they've got a system called an Area RAE System. 10.49AM

That's Area R-A-E?---Yes, R-A-E, that's the brand name. It's a really useful system in that it's able to - a number of satellite detectors and they've got a polling computer in the middle and that sends it back to that computer and you can see the concentration, and they were using that in the mine at various places to understand the levels of CO. 10.50AM

That their firefighters were being exposed to?---Firefighters and they had one also, I think from memory, at the security guard, when you come into the staging area, they had one out there too, I believe. So they had them located around the place. 10.50AM

You gave them some advice or made a recommendation to them about where one such monitor could be located. Can you explain why you gave that advice?---On the 13th I went down to the staging area down at the - - -

We'll just get a map of the mine up, that might assist you. 10.51AM The staging area was near the power station, was it

not, near the main gate? Is that right?---No in the early pieces the staging area was actually near the mine itself.

Are you able to identify, looking at that, the general area we're talking about?---I think it might have been somewhere there. 10.51AM

So you're pointing to the northern part of the mine?---Yes, there was an initial staging, and the CFA can correct me; from memory, because you sort of drive in, but it was very close to the mine, so I could actually walk on the edge of the mine, 30-40 metres at the top here somewhere. 10.51AM

CHAIRMAN: I suggest that we might use the map that's now been prepared by GDF.

MR ROZEN: We don't have it on the system. 10.52AM

CHAIRMAN: I don't think we have it electronic form, but at least it does have a grid from A-B and 1-16. If we just have you give the grid reference?---I suppose it looks like that spot where it says "Fire Service", the green dot. 10.52AM

MR ROZEN: "Fire Service" and "RTL", is that what you're referring to?---I think so.

Is it the green dot above the word "service" or under the letter "C"? Can you be that precise.

CHAIRMAN: It's roughly L5 anyway?---Yes, sorry. 10.52AM

MR ROZEN: That's all right. Thank you, Dr Torre. Is that the location that you refer to in paragraph 17 of your statement as being a place where the Area RAE monitor should be located? I'm just trying to make a connection between that location and what you're talking about?---Sorry, that location was where the 10.53AM

staging area was where I first saw the Area RAEs. So when I got to that staging area that's where the firefighters were coming in and getting their CO testing and they were actually going down to fight it.

When I went in there that morning they had a number of Area RAEs that weren't being used. Because it's a manual system - sorry, I'm going back to explain what I was doing. 10.53AM

Sure?---They have a manual system where they have a technician or a firefighter that actually monitors the concentration of CO so that when they've got different sites around the mine they can understand those concentrations and then take action as the levels increase. 10.53AM

They had a number of Area RAEs that weren't being used, so at the time I asked the Commander in charge, and the MFB scientific officer, Craig Tonkins(?), if it would be possible to actually deploy some of those Area RAEs that weren't being used for various reasons - you know, there was problems with smoke and vehicles and transmission of data, if they could deploy them around some of the spots around the perimeter of the mine, just to give us an indication if we were getting any plumes of carbon monoxide from the mine to the township. 10.54AM 10.54AM

So you were looking at a way of using equipment that they brought down to deal with firefighting safety as a way of monitoring for the community?---And we do that in emergency response incidents, we collaborate. The scientific officers and the Fire Brigade at an incident we all work together and it would not be uncommon to 10.54AM

work with the Fire Brigade to try and understand impact assessment. Sometimes it's even the Fire Brigade are used to identify dust that we don't know, so it's always working together to try to use the resources the best way. 10.55AM

At paragraph 17 of your statement you say you liaised with the CFA, recommended that the Area RAEs be strategically placed, one at the mine perimeter to enable worst-case scenario readings. Does that mean that there was one unit placed or several?---I left it 10.55AM to the Fire Brigade. I just said, if you can deploy monitors out there. Because one of the things that you need to do when you deploy the Area RAE, you've got to make sure that it's in a location where it can send the signal back to the polling computer, so there's a 10.55AM limitation distance. So they need to determine that, but the point is, if they know the objective, it's trying to get an understanding of the smoke coming off the site, then they applied that.

What I was talking to them about was we didn't 10.56AM have any monitors that we could do that in Morwell because we were doing some spot checks, because at the time we thought that the carbon monoxide was confined to the actual mine.

But you wanted to do some monitoring to see?---As a 10.56AM precaution.

Are you able, by reference to the gridded map that's in front of you to indicate where the Area RAEs were placed after that discussion?---No. No, because by that time I had left the site and gone to try to find 10.56AM the bowling club to actually to start to deploy

DustTrak.

Okay, I understand. Paragraph 23 is in relation to carbon monoxide monitoring, you refer to the use of handheld monitors at specific locations. I take it that's on 13 February, the second day you were there?---Yes. 10.56AM

Where did that equipment come from to enable that monitoring to be done?---We hired that equipment from a company that specialises in occupational health and safety monitoring called Air-Met Scientific, and they provided these two monitors that people wear for monitoring CO in the workplace. 10.57AM

So they were used by EPA officers?---Yes. The idea there was, we had put people in the field that could go out there and do some spot tests just to give us an indication of what the CO measurements were. 10.57AM

You chose the facilities that you've identified there because that's where particularly vulnerable groups would be?---The general advice is, try to select areas where - we had those sensitive residents, but also general areas where people are just to give us an idea, but it was important to make sure that it was over that area, so over a large area so we can get an indication of spatial variation, so pretty much left it to the field people to go out there and start doing some measurements. 10.57AM 10.57AM

Do you know if the readings, the records of those measurements, have been provided to the Inquiry, those carbon monoxide readings?---I don't think so, I'm not sure. I'll have to refer.

If you could please, yes. At paragraph 24 you say that those initial steps that you'd taken - that is, the 10.58AM

installation of the DustTrak at the bowling club, the carbon monoxide monitoring that was being done with the handheld monitors and the use of the Area RAE equipment at the mine, enabled you to put together a preliminary picture of air quality in Morwell. What did the preliminary picture look like?---It is also worth adding that we were also commissioning the Morwell East monitoring station. 10.58AM

Yes. Tell us about that?---Generally the approach was to have a three-tiered approach in terms of trying to do air quality. We wanted to have something that focused on the high impact that gave us a fixed site that gave us the amount of particles. We also wanted something that was mobile, if we could, just to understand the extent, are we looking at the right pollutants, but we also needed to have something, which I suppose has been debated, about Morwell East, because we wanted something that was going to give us an understanding of general concentrations in the general Morwell area where most of the people were as well, so we needed it to get that full picture. 10.58AM 10.59AM 10.59AM

You identified that the recently decommissioned site at Morwell East could be re-commissioned to assist you; is that right?---Yes. That was there. Once the team had identified it and thought that was the best, the quickest way we could get equipment in to do the monitor, they went ahead and did that. 10.59AM

We weren't getting CO, I mean the focus was very much on particles, there was advisories there, and it's all about smoke and the advisories trying to get people's attention that smoke, elevated levels of 10.59AM

smoke, the less you can see in the distance, the higher the levels of particles are like, the more smoke there is, you need to take that into account, precaution, so particularly the advisories in the information was key, as well as the monitoring; because, one of the issues about monitoring, you can't monitor everywhere, so we need to be cognisant of smoke and potential impacts. 11.00AM

You refer in a couple of places, and I'm talking about carbon monoxide, to there being no elevated readings or significant readings of carbon monoxide. What do those terms mean? Against what standard? What were you judging the carbon monoxide levels against?---We were actually - we weren't really using a standard, it was really an exploratory number. We were trying to work out if there was carbon monoxide, what levels they were. What we did find was, there was very little, you'd either get 1 or 2 ppm, occasionally we would get 15 ppm, but it would be instantaneous, so you would get a reading and it would be gone. So it was more about trying to understand. 11.00AM 11.01AM 11.01AM

In an emergency incident it's really about, what are the levels, how can we stop those emissions getting to those levels, so indicative numbers that we can try to work with.

I think I may have cut you off, you started telling us about that preliminary picture that was emerging. Focusing on PM 2.5, what were the initial readings that you were getting from the DustTrak telling you about the general level of PM 2.5 at the bowling club?---Yes, they were elevated. I think the numbers, we were still trying to digest the numbers and we were waiting for the Morwell 11.01AM 11.01AM

East data to come along. We were seeing some impacts. I think during that period of time I think the impacts might have been more from the bushfires because I think there were easterlies - from memory, easterlies and northeasterlies, so we were seeing smoke that day. 11.02AM

Those early records, the records from the DustTrak monitoring that occurred at the Morwell South bowling club, do you know if those records have been provided to the Inquiry?---I believe so. So DustTrak data is what we call estimated PM 2.5s and they should have been, I believe, reported. Or we can always... 11.02AM

We're just checking, there's a bit of a degree of confusion about where that material is and the form that it's in, but your understanding is, it's been provided to the Inquiry?---I believe so. 11.03AM

We'll further investigate.

MEMBER CATFORD: I wonder if I can just ask: In terms of those early PM 2.5 readings, you said they were elevated, can you, from memory, give us a bit more information? Of course this is terribly important in terms of any consequential health advice to the community. We understand what the levels were from around 20 February, but it's these early periods when the fire was very intense in terms of those PM 2.5 readings, and particularly whether you were passing on information to the Department of Health?---We had an event, I believe, on the 13th that we put down to - but that was for Morwell East - Traralgon from the bushfires. The elevated levels, the really high ones from the mine were on the 15th and 16th, they were the two days where we really had elevated levels, really 11.03AM 11.04AM 11.04AM

high.

Sorry, in South Morwell?---South Morwell; oh ashes across the - yes, South Morwell, but we also got - - -

Because I don't think we've seen those figures yet?---So those levels are what we call the estimated levels. 11.04AM

And those were passed on at the time as well, were they?---Now, at the time that data, we were still in the process of trying to understand that correlation and those concentrations. The data that we did - what we were saying was about alerts, about the relative 11.05AM concentrations at Morwell East. With Morwell South, the only data that we could do in terms of correlating that was to give an indication of what the levels were, that was on the Sunday night on the 16th where the levels at Morwell East were around about two and a half 11.05AM to three times higher than - the levels of Morwell South were higher than Morwell East, and so that gave an indicative number of about 250 micrograms per cubic metre, just using the Morwell East data.

We've gone back and - we didn't have the data at 11.05AM the time, so we'd obviously given some information to the Department of Health about the likely levels, that the levels were high, well above the advisory reporting standard, but they were indicative numbers. So since that we've gone back and tried to, what we call 11.06AM hindcast, go back, use the correlation data, what did it show, but at that time we didn't have that data, apart from those indicative numbers.

If DustTrak equipment had been available and essentially assessed, validated, am I right in thinking you could 11.06AM in theory have produced more reliable PM 2.5 results

sooner, could you?---Yes, we deployed it as quick as we could. I mean, ideally, and this is the thing I was talking about before about having that capacity to have that rapid response, having the systems in place so that, when you do put them out, you can automatically have that confidence in the data. So we were at that stage really trying to get that instrument operating, trying to understand those estimates, provide an indication of those levels. 11.06AM

MEMBER PETERING: Mr Torre, yesterday Mr Merritt spoke around relying upon your educated and experienced view around driving down to Morwell and just, I think his words were, "Visibility assessment" and just having a look around the area. We're talking at the moment about the data collection. Do you provide a qualitative professional opinion about what the air quality is and whether there's any health impacts?---Generally what we do is, we work within the conventions and methods that we have. So, with smoke we have a bushfire smoke protocol, and in that on our website in the Department of Health we work on that using landmarks to try to give an indication of potential hazards. 11.07AM 11.07AM 11.07AM

On that Sunday when I did come down, it was around about 5 o'clock, the visibility was down to, oh, less than a kilometre. We've got a table that sort of guides people in terms of trying to understand those levels, and it was at levels where, if you look at the categories, it's called "hazardous"; that's very high levels. 11.07AM 11.08AM

So, yes, in terms of - I mean, I think it's pretty

obvious when you've got a big air quality impact. To be honest, I'd been to the mine on that Thursday morning and on that Sunday driving down, that was unprecedented, just unexpected in terms of the level of smoke that was in that mine on the Thursday compared to that Sunday. 11.08AM

So did you then provide a report by the two EPA? So just tell me about the chain of communication to the Department of Health?---There's been a lot of work being done on that weekend with the Department of Health. There was the Saturday, I suppose you'll probably go through, you were talking about that before? 11.08AM

MR ROZEN: You go ahead, Dr Torre?---Just developing. Once the - I mean, it was so unexpected the smoke and the impacts, especially when CO monitors were starting to read around the place about the high carbon monoxide concentrations. We were working with the Department of Health who were trying to work along a protocol, trying to understand and develop that Carbon Monoxide Protocol in terms of triggers in an emergency. So when I got involved at the State Control Centre, I was trying to support the Department of Health in developing that protocol. 11.09AM

My role there was to provide any sort of advice in terms of exposure or potential monitoring requirements or assessment. By that time, in terms of the monitoring, it was about trying to develop the best way we could to monitor levels of carbon monoxide because of the focuses on carbon monoxide, so we started to talk to the Fire Brigade about trying to get a carbon 11.09AM 11.10AM

monoxide network in Morwell South, and that's Commander O'Connell over the phone to try to talk about, well, you've got your Area RAEs, you can deploy them to give this indication to help us to work towards being prepared for this protocols to provide the data. 11.10AM

So during that night on the 15th the Fire Brigade went out and started to try to put out that carbon monoxide network and that progressed into the next day and the Sunday. On the Sunday in terms of providing data, when I got down there about 5.30-6. 11.10AM

This is Sunday the 16th you're talking about?---16th, when I saw the smoke, just couldn't believe it, because visibility was well below at that point.

MEMBER CATFORD: Based on your experience, what sort of levels PM 2.5 would have been produced to cause that 11.11AM dense smoke?---I think we're estimating could be 500, 700, it's very high.

MR ROZEN: This is against a standard of 25 milligrams?---I'm saying it would probably be, at the time it's very low, I don't know, you know, we're 11.11AM talking 250, 500, I'm not sure. I mean, I've never seen anything like this before so I'm really guessing but, you know, 200, 300. Looking at some of the stuff that was coming from Morwell East, comparing the visibility data from DustTrak to that, at the time the 11.11AM advice we gave to the Department of Health was, it was three times higher, Morwell East was really on a 24-hour rolling average, was 85; to that effect, multiply that by three so we're in that order of 250, that's where our estimate - but it was pretty high. 11.11AM And I drove into Morwell as well, just to see how far

the smoke had gone and it was definitely obviously higher closer to the mine, but it's still pretty strong in Morwell itself.

MEMBER CATFORD: Just to summarise, it sounds like we should be able to get some indicative data for 15-16 February?---Yes, we've done an estimate. I think one of the things about these incidents, it's really important to go back there, look at the data, what can we learn from it, how can that inform health studies because it's really important to understand this, and if there's a gap of knowledge and this helps it, I think we do that, even though they're only estimates, and I know statisticians have a lot of arguments about the way they produce the data but we've got some estimates, but they weren't available at the time. In terms of, now we go back, look at the instrument, try to come up with a number that we think would be representative of that day. 11.12AM 11.12AM 11.12AM

Finally, just going back to 13 February, was the level of smoke the same as on the 15th or 16th?---No. Oh no, no, no, no, we're talking two different situations. Like I say, I went down to the mine and I saw what I saw down the mine, and I went down to Morwell, looked at the bowling club, there was smoke around and it was impacting and our advisors were there, and that's why we were really keen to make sure those advisors were there alerting people that smoke's going to affect your health, but no, that's Sunday, I've never seen anything like that. 11.13AM 11.13AM

So it really ramped up on the 15th and 16th, is that it?---Yes. I mean the winds, southwesterlies, and it's 11.13AM

unfortunate, it seems to be a prevailing wind in Morwell, so it's just pushing that smoke over to the residents.

Just to pursue this slightly more. Later on once South Morwell was up and running there were some high levels recorded?---Yes. 11.13AM

In your opinion were the levels on the 15th, 16th higher than those levels?---Yes.

Because without looking at the graphs, they were in the 200s, even 500s, but this was higher again then?---Yes. 11.14AM

So we had three major events, I believe. So you're starting off at the 15th and 16th, that's their peak at the moment. There's some discussion potentially, was there anything on the 9th, but that's something I suppose Claire, we can talk later on. Then we have 11.14AM another peak around about the 21st, 22nd, 23rd, so we've got the monitoring in place by then. Then we have the third event on the 26th and 27th.

In our statement, Claire and myself in terms of yesterday, I articulate the number of days that the air 11.14AM quality - the advisory reporting standard has actually been exceeded, so there was 21 days at Morwell South that the advisory reporting standard was exceeded. Seven of those days, looking at the PM 2.5 Protocol, were in a category of hazardous, so that's greater than 11.15AM 157, and four of those days were in that category of severe.

MR ROZEN: Extreme, is that right?---Extreme. I mean, that gives you an indication of the levels and the potential of, call it the quantity of those. 11.15AM

MEMBER CATFORD: The peak of the second episode according to

the data we've got was 500?---That's a 24 rolling average.

But you're saying actually the first episode, 15th, 16th, was significantly higher than that?---Significantly higher, yes. When we compare, in terms of a convention, the advisory reporting standard is on a calendar day, so you you've got an advisory reported standard of 25 from 12 o'clock to 12 o'clock, and you basically come up with an average and you compare that against it. The rolling 24-hour average gives us an indication of what the levels would be like compared to the standard, which is an hourly standard. But yes, I think that that's the consequences you see they're the three (indistinct). 11.15AM 11.16AM

MR ROZEN: If I can just summarise that, and we know this from your joint report and we'll come to that in a moment, but on one of those four days that were in the extreme category, according to your joint report, there was a reading that's been referred to by Professor Catford of 501 µg/m³. Do you agree with that?---Yes, we've been - I think some of the estimates could be, yes, 700 I think, could be. 11.16AM 11.16AM

This is the joint report that you prepared with Ms Richardson, obviously that's not yet in evidence but we have copies of that and we could distribute that now, might be the simplest thing. We have it on the screen. The bit that you're referring to is on page 5 of the document, question (c), "Did the level of PM 2.5 exceed the relevant standard during the period? If yes, please provide details of when this occurred and for how long." Just so we can place this in context, 11.16AM 11.17AM

and there'll be some evidence about this shortly, but this is a joint report that you have produced together with Ms Claire Richardson, who is an independent environmental scientist that's been engaged by the Inquiry. Is that correct, Dr Torre?---Yes. 11.18AM

The figures that you were just referring to are the ones that we see there. You were asked the question, "Did the level of PM 2.5 exceed the relevant standard during the fire period? If yes, please provide details of when this occurred and for how long." The time span 11.18AM that you're there referring to is 14 February to 31 March, so that's 45 days?---Yes.

So that would seem to include - obviously it includes the 15th and 16th, the particularly bad weekend that you were referring to a moment ago?---Yes. 11.18AM

As you've said, there are 21 days when the levels exceeded advisory reporting standard. Of those 21, seven saw readings in the hazardous category?---Yes.

These categories are derived from the PM 2.5 Protocol that was utilised; is that right?---Yes. 11.19AM

Then there were four days where the levels estimated and measured were in the extreme category, that is greater than 250 µg/m³, so that's in excess of 10 times the standard. Is that right?---Yes.

Then on one of those days, even though it's not referred to 11.19AM there, do you agree that the highest reading during that period was 501 µg/m³ or do you say there were higher readings than that? That's what I'm trying to understand?---Remember that some of the data on the 15th and 16th was actually estimated several weeks 11.19AM later or months later. We weren't able at the time to

provide that information, this is when we go back and start doing the hindcasting and start looking at those estimates. So what I tried to do there is try to summarise that on reflection of what that data was at the time. 11.20AM

Just so that we can understand that, on those two particularly bad days - do I understand your evidence to be that in the entire period the worst days in your experience were the 15th and 16th?---Yes.

The monitoring equipment that was in place at that time to measure levels of PM 2.5 was DustTrak equipment at Morwell South, and was that it?---No, there was also the BAM or the standard method we monitor at Morwell East. 11.20AM

So that was up and running at that time and fully operational?---Yes. 11.20AM

What you're telling the Inquiry, as I understand it, is, by looking at that fully calibrated data that comes from Morwell East and DustTrak data, you can work backwards to get - - -?---At the time what we did was, because DustTrak data hadn't been calibrated to the levels that we were working to, we used the Morwell East data and we used - because one of the detectors we have is a visibility reduction detector, and tried to compare DustTrak detector to that detector over at Morwell East to try to come up with an indicative number. That indicative number that we provided the Department of Health was around about 200. It was around about 80 or 85 µg/m³ at Morwell East, and we were thinking that the way that the instruments were recording, that we had something like about three times, so it's about 11.20AM 11.21AM 11.21AM

250 µg/m³-odd at the time, that's what we were thinking the concentrations were as an estimate.

Just to go back to a question Professor Catford asked, I'm not sure that we fully understand what was done with the data, the indicative data that you had on the 15th and 16th from the DustTrak monitor; was that provided to the Department of Health at that time? Are you able to help us with that?---I don't think DustTrak data was - we were just providing air quality forecasts. So by the time we got to the 15th and 16th we were doing the alert, the advisories, and in those advisories there was graphs and data to indicate indicative levels. When it came to the actual data at Morwell South, it was that Sunday night when I'd got there, I'd provided the advice to the Department of Health, just that particular concentrations that we were estimating that were likely in Morwell South. 11.22AM 11.22AM 11.22AM

You provided that to the Department of Health, did you say?---Yes, just indicative numbers of what they were.

What was the form of that information? Was that verbal or did you - - -?---No, that was an email. And so, as well as that, there was some information of the carbon monoxide levels that the Fire Brigade had been having. But I think the challenge here was, we had a set of data that we weren't quite sure about the accuracy, they were indicative, like the Fire Brigade data. It was very difficult to get the data in the format, because it wasn't automatically able to be able to average the data into the numbers, and they were spot readings and so we had a set of numbers that were basically defined as five minute readings at all these 11.22AM 11.23AM 11.23AM

locations, and so it varies quite a lot, and we don't really know - we didn't have it in a way that was able to get it to compare it against the protocol.

So what we could do only for the Fire Brigade was to basically - sorry, to the Health Department, to provide the data that we did have in the format that we did have, but working with the Fire Brigade and the Emergency Services to come up with contingencies. 11.23AM

I understand. I just want to press you if I could. So you send an email on 16 February to whom?---It would have been to the Health Department, probably people that was at the Regional Control Centre, I suspect it would have been Vickie, Vicky Lynch. So the Health Department had - so we were working together. 11.24AM

I don't think we've seen that email, Dr Torre, could a copy of that be provided to the Inquiry?---Sure. 11.24AM

MEMBER PETERING: Perhaps just in the other three peak periods where there were other emails to Vicky, was that the source of information?---No. We were furiously trying to get our monitoring system, working through with the Department of Health with the protocols, working out the assessment criteria, by the time it got to the other ones, we had a formal recording system in place, we were sending reports up. We were confident that that data that was coming through was the data we were working towards. 11.24AM 11.25AM

MEMBER CATFORD: Your professional judgment then was on the 15th and 16th, this was the worst part of the smoke experience at Morwell, and it was greater than the second peak which was on around the 21-22 February?---Yes. 11.25AM

Just in terms of that qualitative advice to the Department of Health, what were you saying? This is shocking, terrible, this is something we should monitor, what was the tone or the level of concern you were indicating?---Well, it was very, very high. 11.26AM

It was very, very high?---Well, I think the numbers speak for themselves, you know, you've got elevated carbon monoxide, you've got elevated potentially of - you've got smoke everywhere, you're above the advisory standard, and hopefully what was in place was 11.26AM precautions that people were aware of and alerts and the advisories. I think it was pretty obvious from, just the observations of smoke in the town.

Just to close this off then, if you'd had a calibrated DustTrak machine available ready to go from day one, 11.26AM you would have been more confident in the quality of the information?---Yes.

So then looking forwards, obviously that's something that we need to consider?---Yes, and that's probably one of the recommendations about having an overall State rapid 11.26AM response system in place so that, hopefully nothing like this happens again, but we're able to at least respond appropriately.

MR ROZEN: This observation, Dr Torre, is in no way directed at you, but from the perspective of Counsel Assisting, 11.27AM the position where there's uncertainty about whether we have this data or we don't is clearly unsatisfactory and I think those to my left would no doubt be understanding that position and I'm being told that there is every effort being made to locate the 11.27AM information that we've sought as a matter of urgency,

because clearly as I've indicated to Dr Wilson, if it's material that needs to be put to witnesses, we don't want to have to recall those witnesses to do that. It's obviously important for Dr Torre, it will be important for Dr Lester as well. 11.27AM

DR WILSON: I'm not sure we understand the unsatisfactory qualification, we're running around trying to get the documents as we speak.

MR ROZEN: The unsatisfactory observation was not directed at any individual, but rather at the state of affairs. 11.28AM

Dr Torre, one last issue about the events of the 15th and 16th, and it concerns those elevated carbon monoxide readings that you were referring to. The Inquiry last week heard from a Mr Katsikis who is a Deputy Incident Controller, I think you're familiar with the evidence 11.28AM that I'm referring to. Firstly, can you explain the context in which those elevated carbon monoxide readings came to your attention? Was it on Saturday the 15th? Have I got the timing right?---Yes. Well, I got involved in the process a bit later. From my 11.28AM understanding there were some elevated levels, I'm not quite sure of the numbers, 15 or 20 ppm-odd, that was spot testing I believe.

I think the highest reading that Mr Katsikis referred the Inquiry to was 50 ppm?---Yes, well, that's spot 11.29AM readings, it could be, yes. The only thing from my understanding, and I wasn't really involved, there was this issue about the 9 ppm, and I believe Manny (sic) Katsikis was talking about a standard that's applied. I suspect what he probably was talking about there was 11.29AM the ambient air quality objective that's used, just for

ambient air, which is an 8-hour 9 ppm standard. So it's not really related to a - I think, I'm not sure, I think that that 9 ppm may have been confusion on his part. I'm not sure where he got the 9 ppm apart from that. 11.29AM

He told us, and this is in his statement, that the 9 ppm was referenced in a Department of Environment Heritage recommended ambient air carbon monoxide level, and it was particularly called up in the Health Management Plan that was in place as he understood it for the 11.30AM Incident Management Team at the fire?---I don't know, I can't answer that. The only comment I make, we do have an ambient air quality objective, it is an 8-hour average and it happens to be 9 ppm.

His evidence was that there was conflicting technical advice 11.30AM coming to the Incident Controller about whether the 9 ppm was the standard to use or whether some other standard should be used for the purposes of determining if warnings should be given to the community?---I can't comment. 11.30AM

He makes reference to a Department of Health toxicologist that was involved in those discussions. Can you assist us at all with who that might have been?---No.

All right, it's perhaps a matter we'll pursue with the Health Department. 11.31AM

The final matter I want to ask you about, Dr Torre, are some matters that, as I've forewarned you, were raised with Mr Merritt yesterday and he thought you might be better placed. You've probably dealt with a couple of them. The first concerns a 11.31AM meeting or two meetings with the Latrobe City Council

and the Environment Protection Authority on 8 April and 2 September last year. Do you recall attending two meetings with the council?---Yes.

There are some notes that have been provided to the Inquiry by the council, perhaps if they could be brought up. 11.31AM It is exhibit 33. Have you seen these notes before, they have just come up on the screen next to you, Dr Torre? Anyone draw these to your attention between yesterday and today?---Yes, there was, yes. I mean, there was a discussion about these notes that were 11.32AM presented yesterday, though I haven't looked at the detail.

Were you present at both the meetings?---Yes.

The issue that was particularly raised yesterday with Mr Merritt concerned the Latrobe Valley Air Monitoring 11.32AM Network. If we can just scroll down a little, do you see LVAMN, is that a network that you are familiar with?---Yes.

Because it was raised at this meeting or were you otherwise aware of it before it was raised?---No, I'm aware of 11.32AM that because it's part of the data that's reported by the network, because they've got two monitoring stations in Latrobe Valley.

Where are those stations?---One's at Rosedale South and the other one's at Geraldine Hill, and they're at industry 11.33AM sponsored stations.

The readings from those stations are what?---They're annually reported as part of their air monitoring program, so Rosedale South tends to do SO2, NO2, ozone, PM 10. 11.33AM

Is that a particular facility at Rosedale South? What is

it?---Yes, it's an air monitoring station.

Is it attached to a particular industry site or what's there?---No. Air monitoring in the Latrobe Valley's been going on for a number of years. From my understanding it's been going on for 20-odd years, there's been 26-odd stations that they've done monitoring around it, there's been the Latrobe Valley Air Quality Airshed study. 11.33AM

Rosedale South was one of the stations that was maintained out of that system, and from my understanding the rationale was that it was downwind of all the power stations and so it gave an indication of impacts. Geraldine Hill provides some of those plumes under certain methodological conditions where they get slightly higher impacts. So it's part of a network that's been there for a long time and it's gone down to two stations. 11.34AM 11.34AM

What was it initially?---From my understanding the SEC ran quite an extensive network, 20-odd stations around the place. 11.34AM

So the concern that was expressed apparently at the meeting by the councillors about a reduction in resourcing of that network seems to be a well-founded concern?---Well, I mean going from 26 stations to two, but obviously in that assessment - like in all air monitoring networks it's about, what are the impacts, what are we seeing? From my understanding is that a lot of times they were meeting the air quality objectives, and that accordingly contracted, so they moved stations around, tried to get different results to try to assess those impacts. 11.34AM 11.35AM

Did you understand from the meeting that the councillors were asking the EPA to address that matter - that is, the reduction in resourcing of that network?---Yes.

Was that the gist of it?---But the network's been reduced for a number of years. Yes, the council were very keen to have more air monitoring in Morwell. 11.35AM

Presumably the decision about the EPA's response to that would not be taken by you?---No.

That's a decision for others, is it?---Yes, it's in terms of assessing an air monitoring program and a decision about what are the priorities. We went to Morwell to do the monitoring program, it was really initiated as something out of the works approval for the dual gas plant, there were some anomalies in the modelling, so we went down there, did some monitoring to do that, but while we were there too we wanted to understand what we think is the biggest impact in regional Victoria, smoke, to keep that over an extended period of time. We did that monitoring, assessed that information and compared it to Traralgon. 11.35AM 11.36AM 11.36AM

The assessment was that, if you take out those peaks for smoke under certain conditions, Morwell/Traralgon was generally representative of air quality in that area. The other thing with Traralgon is that it's one of our continuous trend analyses so we can see how air quality's changed in the valley over a number of decades. 11.36AM

I neglected to ask you earlier, but that proposed upgrade of the Traralgon monitoring station so that it could monitor PM 2.5, has that now happened?---Yes. 11.36AM

It has?---We were intending to improve our network a year

ago or so for PM 2.5. We were always heading towards getting that PM 2.5 network. So Traralgon, it was obviously an area that was high priority, it's in regional Victoria, for the power stations, but more importantly there's the smoke that permeates in areas certain parts of the year. 11.37AM

When did the Traralgon station's capability to monitor PM 2.5 commence? Are you able to give us a date for that?---No. It was only recently.

Since the fire?---Yes. I mean, the intention was to - unfortunately the fire come along, the intention was to have it there earlier. 11.37AM

Yes, you became a bit distracted?---Unfortunately. It was a horrible event really, wasn't it?

The final matter I want to ask you concerns the peer reviews that were conducted into the Carbon Monoxide Protocol, we'll probably return to the protocol itself in the joint evidence session, but do you know, there were peer reviews into the protocol that were conducted and commissioned, were they, by the EPA; is that right?---Yes. 11.37AM 11.38AM

Were the results of those passed on to the Department of Health, do you know?---I believe so. Actually I can't comment on that. I assume they were.

The protocol itself was a joint product of the EPA and the Department of Health?---Yes. 11.38AM

So it would seem logical that the peer reviews would also be shared by the organisations?---I would think so, yes. Just, there was so much going on.

I understand. That concludes the questions that I want to ask of Dr Torre. I think there's some questions by the 11.38AM

State.

CHAIRMAN: I'll ask a question first then I'll call for that. We heard evidence yesterday from Mr Pole in relation to the regime that he applied as from 18 February, which I think you were still down here the second time, did you have any direct link to the Education Department or Mr Pole?---No. 11.39AM

So that anything that he would have decided would have been in effect coming indirectly from you?---No. My role on that would have been through the regional command system. So we very much worked through that, the management response, the AIMS system, so we were at Traralgon and we would have been going through that process, so, no, I didn't have any direct contact. 11.39AM

He obtained a report from a hygienist. We haven't got the details of the protocol, but there was then, if you like, a particular regime that was put in place that he operated on, and I gather that was only indirectly as a result of you. Once again, there was nothing that you were directly involved in, but I take it that there are a number of independent air quality people who could prepare that kind of independent report for that situation?---Yes, there's consultants that work - there's the ambient air quality ones that deal with those conventional areas but there's also industrial hygienists, yes. 11.39AM 11.40AM

MEMBER CATFORD: Could I just ask a couple of quick questions. You commented on the peer review for the Carbon Monoxide Protocol. Did EPA commission a peer review of the PM 2.5 Protocol?---Good question. Sorry, I'm not sure. 11.40AM

We don't have any information that it did, but I'm just wanting to confirm that?---There may have been. Sorry, there was quite a - it was a team effort, there is a lot of people doing work back at the office and the programme leader, Gavin Fisher, would have coordinated that particular activity.

I'm very conscious of the amazing amount of work you and your very small team did in a very short period of time, and you already explained earlier on that in fact, if you looked back five years, in essence you've had a 50 per cent reduction in the number of scientists in the air quality area. If you'd had the same number of staff, would your response have been any better, faster, more appropriate, more helpful?---I think the limiting factor is the air quality program. The air quality program is based on doing the conventional air monitoring, we've got a network of stations where, if you see this role about EPA being a rapid response for emergency, we're not geared up for that. It's kind of like this kind of void to some extent because we're very much focused on the bigger picture. I mean, we do do short term monitoring for different events, but when it comes to emergency response, it's having the equipment, having the people ready to go, there's a number of different steps.

So obviously there's an equipment dimension, but there's also a staffing dimension in a rapid response capability for the EPA? I think that's what you're saying?---It's just that we're not - it's just the way we're structured and the way we operate, it's just way out of our - the way we operate normally.

I just want to take it back about in terms of providing information and contingencies. I think it's worth adding something with respect to that night, the Sunday night when we're trying to get data and working with the Department of Health on protocols -- 11.42AM

MR ROZEN: Sunday the 16th you're talking about?---Yes. We were working with the Fire Brigade trying to come up with, if we can't have the data in a certain format, what's the best way to try to get that data.

That evening we were talking with the Fire Brigade 11.42AM about trying to send - once you've got a protocol, one of the issues about the protocol is you have a level but it's also got to be an operational thing. How does that number, how do you verify those numbers, so we tried to put in place a contingency where the fireman 11.43AM that was actually on site at the polling station at the Morwell Police Station would look at the numbers and have triggers, and so once that protocol had been determined, which was actually less than the 1-hour standard, it was around about the 17, and I suppose 11.43AM that's in - that they would then contact the scientific officer and then there would be a regime in place to say, well, where is this concentration, do we need to verify it, where are there some safety areas, so there's a whole lot of work being done to try to get 11.43AM those contingencies in place so that we could understand those impacts and then feed that back into the management. That was working with the Department of Health in trying to streamline them or get some clarity around them, so there was quite a lot of work 11.43AM that night and the next day to firm that up.

And then also look at the resources we needed to, to make sure we could do that better, so it was every day we were trying to continually build so we could build better and better systems as we went along. Because the 15th and 16th, to be honest, that came out, it just came out of the blue. 11.44AM

I understand Mr Burns has some questions.

<CROSS-EXAMINED BY MR BURNS:

Doctor, you've been asked about the provision of information, both to the Department of Health and indeed to the Board, and you've been asked for some emails with regard to when the information was first provided to Health on the 15th and you've undertaken to provide those emails; is that right?---No, the 15th, the emails in terms of some of those impacts would have been more about our air quality forecasting people trying to provide the advisories. So on the 15th, early in the morning the high levels smoke advisory was given and then there's a summary of levels that was basically indicative levels around the place. 11.44AM 11.44AM 11.45AM

Questions were asked, Professor Catford asked or suggested that the material hadn't been provided to the Board. Is it your understanding that the Board requested a letter on 19 May this year of access to all results of air monitoring completed by the EPA and that was answered by your agency through the government solicitors on 22 May?---Yes. 11.45AM

I tender that letter.

#EXHIBIT 38 - (Addition) Letter from VGSO dated 22 February. 12.12PM

With regard to information that was provided, were you also providing information to Incident Controllers on-the-spot?---Yes.

What was the set-up about that? Was there someone from your agency sitting with the Incident Controller?---Yes, we had a structure in place, so we had an emergency management liaison officer at the time, an MO, and they were very much acting with the Health Department and other Incident Controllers. On the 15th our MO at the time, Tim Bessell-Browne, so he would have been actively involved in that incident management activity. 11.45AM 11.46AM

Was that helping the Incident Control to interpret the data they were receiving in real-time?---Oh, I don't know.

Your emergency coordinator sitting with the Incident Controller, what was their own?---I think they were trying to understand the impacts, trying to work out what the levels were around, providing any support that we could provide, feeding that back into - we had people at the State Control Centre as well who were actually working with what was needed, what did we need to develop, what clarity, I believe. I think the emergency incident management, you get a lot of input and people are working through what their role is and what support they can provide. 11.46AM 11.46AM

Mr Merritt, the former CEO of your agency, was asked about the absence of a national standard in relation to PM 2.5. Is it your understanding that there's a process in place and that's well on the way to achieving a national standard now?---Yes, it's very close. There's been quite a lot of work done in the last couple of years in really developing that standard 11.47AM 11.47AM

and, yes, quite a lot of work. There's still a bit of work to be done but there's been a significant amount of work done recently, yes.

Professor Catford asked of Mr Merritt whether he thought Victoria should take a lead role and impose standards on a State basis. What's your view about state based standards as against national standards?---No, I think the national process is really important to abide by. One of the principles of the national process and national environment protection measure is this notion of equivalent protection. It states one of the issues that the NEPM was developed - we have different standards across different States. You'll have a high standard for SO2 in one State for particular reasons. 11.47AM 11.47AM

The other thing, too, a national standard also provides the funding to do the research and really develop standards well. I think the national approach is really the way to go. 11.48AM

It was suggested that because the standard was advisory only and not a nationally enforced standard that no prosecution could be envisaged in relation to that. Is it your understanding that people are prosecuted on the basis of a breach of their licence and conditions can be imposed on the advisory standard on their licence?---No, the licence is a completely different issue. When you talk about a licence, it goes through another process. For instance, if you have a licence and you have a stack, there are emissions that - limits are determined, and that follows a different air quality impact assessment. So, if you look at the policy, we have in our air quality management policy a 11.48AM 11.48AM 11.48AM

whole lot of design criteria, and in a licence you've got to meet design criteria to ensure you're meeting policy and that there won't be detrimental effects to the environment. So the advisory standard in terms of those licensing really aren't related. 11.49AM

The advisory standard is more about the general ambient air quality of a particular area and any objective that you're trying to achieve with that, and that would encompass a whole lot of activities to try to improve the air quality, like the Tasmanians focus a 11.49AM lot on the planned burning - sorry, not planned burning but the wood heaters. Look, in Australia, it could be diesels, combustion sources. So that's what the advisory standard is.

You've given some evidence about the desire for your agency 11.49AM to have a greater rapid response capability; is that right?---What I'm doing is, I'm just describing the way that our air monitoring program is doing, and not necessarily my organisation but there needs to be a Statewide approach to, how is rapid response under 11.50AM these emergency systems done effectively.

In that vein it would be better if the situation was that the EPA had greater rapid response capability; is that your evidence?---Well, it is more - I suppose it comes down to - yes, in terms of an agency to provide some 11.50AM report, but I think whose role is that to provide that rapid response and who's equipped to do that?

In a review of the Hazelwood Mine fire, has there been an assessment of new equipment that needs to be purchased?---Yes, yes. In terms of our air monitoring 11.50AM program, yes, we are looking very much on deployable

equipment, investigative studies. We're looking at trying to add another dimension to our air quality assessment, and our program leader, Gavin Fisher, has done quite a lot in that area. I believe we've purchased the travel blanket, which is really just a DustTrak in a box. So, just to provide us a way of assessing impacts. 11.51AM

So, you understand the travel blanket has already been purchased or at least the commencement of that process has occurred?---Yes, definitely in the process. I know we're well down the track. Gavin's been negotiating a system that meets our needs, because we see that also as a potential tool for just our regulatory role, trying to understand impacts around industry and some other things. 11.51AM 11.51AM

Deputy Incident Controller Katsikis has given evidence about the process in relation to the Carbon Monoxide Protocol that developed during the course of the weekend of 15 and 16 February. Did you have any involvement in that?---Yes. I was involved at the State Control Centre. The Department of Health were working through that protocol and I provided some assistance in terms of just environmental monitoring, exposure, duration, consideration that needed to be considered in developing some of that protocol. 11.52AM 11.52AM

The evidence from Mr Katsikis was that a decision was taken by the Incident Controller to rely on the advice of the Department of Health in consultation with the EPA before any further warnings were issued in relation to carbon monoxide. Did you have involvement in that process?---From my understanding, there was quite a lot 11.52AM

of interactions at the State Control Centre working out what's the best way to progress. I didn't have any detail on that specific point.

You recall discussions about that?---There was a lot going on. 11.53AM

Not specifically?---I mean, I think what happened was, once the protocol was starting to be evolved, I started to turn my attention about, well, how can we go out and assess that and started to talk to the Fire Brigade about, what contingency with the envelope back in 11.53AM Traralgon can we create this carbon monoxide monitoring network.

You were asked by Mr Rozen what standard were you applying to assess the level of carbon monoxide against. Your answer was that, "We weren't really using a standard." 11.53AM I want to take you to your statement of 16 May 2014 at table 1, below paragraph 7. Do you have that there?---Yes. No, because if you look at the standard - sorry, are we referring to just the spot tests, we're talking about? 11.53AM

You were asked by what standard were you assessing the results against?---Okay, so you're talking about carbon monoxide?

Yes?---Yes, see this is the issue that, when you're trying to assess an ambient air quality standard, it's an 11.54AM 8-hour average and you take a spot test. What that does is it just gives you an indication. Basically it tells us, is there carbon monoxide or is it high; it just gives us indicative numbers. When you're trying to compare against the standard, that's why we go to 11.54AM the trouble of putting the monitor in there that meets

the standard, provides the data in a format that gives you the ability to assess it against the criteria.

In having regard to the assessment of those spot checks, were you also having regard to the State Environment Protection Policy, noting an 8-hour standard of 9 ppm? 11.54AM Were you mindful of the State Environment Protection Policy in that level of 9 ppm over 8 hours?---Yes.

I want to ask you about access to laboratories to get priority analysis of samples. Is there sufficient access to laboratories to do that?---I think from my 11.55AM understanding in terms of laboratories, there was a challenge at the time. Are we talking about the water samples and the sediment samples or are we talking about the air samples? Because we used a number of different laboratories across - we even sent samples to 11.55AM New Zealand.

Mr Merritt touched on this in his evidence. Are you satisfied that there's sufficient access to laboratories?---I think there was an issue from memory, I recall, that some of the laboratories were trying to 11.55AM get urgent results during the weekend and so there was quite a lot of negotiation to try to get laboratories to do the samples as soon as possible.

Are you now in agreement it needs more laboratories?---Oh, yes. That's what really stems from an emergency 11.55AM incident, you know, you try to find ways to do the work that you have to do.

The last thing I want to ask you about, it's a question the Chairman asked you with regard to the evidence of the Deputy Secretary of the Department of Education and 11.56AM Early Childhood Development. Mr Pole gave evidence

yesterday about the decision to relocate schools in South Morwell - that is, south of Commercial Road. Your evidence was that readings in that area were three times higher, the air quality readings were three times higher with regard to air pollutants; is that right?---Yes. Are we talking at the time? When I'm talking about three times higher, I was referring to on the 16th. When we were looking at the data compared on that event, they were three times higher compared to the measurements that were taken at Morwell South compared to Morwell East. 11.56AM 11.56AM

The decision to relocate the schools was taken - occurred on - - -?---No.

You were not involved in that, no, but that was taken on 20 February, four days after you'd noted these readings that are three times higher than East Morwell; is that right?---Yes. 11.57AM

On that basis was the decision to relocate the schools south of Commercial Road, does that have some scientific basis for doing so?---I'm not aware of the information that he had to make that decision. 11.57AM

He's indicated that he relied on EPA information. You're not aware of the decision ?---No.

But in any event you'd say that area south of Morwell, it was clear from the science that that area - - -?---Sorry, yes. 11.57AM

- - - that was the area that had the greatest difficulties?---Yes, and that's why we were monitoring and that's the messages that we were getting. Sorry.

Thank you, Doctor. 11.57AM

MR ROZEN: No further questions by way of re-examination.

I'm perhaps in Dr Torre's hands. Do you need a break, Dr Torre, before the concurrent evidence session or are you happy to press on?---I'd like to press on.

Is the Board happy to press on because we're obviously under some time constraints? In those circumstances, I'll call Ms Claire Richardson. 11.58AM

<CLAIRE MARIE RICHARDSON, affirmed and examined:

MR ROZEN: Good afternoon, Ms Richardson. Could you please for the purposes of the transcript state your full name?---Claire Marie Richardson. 12.00PM

Your professional address please?---My professional address is Air Noise Environment, located at unit 3, No.4 Tombo Street, Capalaba in Queensland.

Ms Richardson, you have been engaged by the Inquiry to provide us with independent environmental science information?---That's correct. 12.00PM

In response to questions that were asked of you by the Inquiry, you've provided us with two reports?---I have, yes.

They're actually described as statements, so perhaps I'll use that terminology. The first statement is dated 26 May 2014?---The final version of that statement was dated 29 May. 12.00PM

Thank you. Have you had an opportunity to read through that statement this morning before giving evidence?---I have, yes. 12.01PM

Are there a couple of - in fact I think it's just one typographical error that you would like to amend?---That's right. There are two occurrences of the word "date" that should be "data" in the document. 12.01PM

I know one of those is in paragraph 31, perhaps if we go to

those, on page 20?---That's right, it's at the end of paragraph 31.

Paragraph 31, the last line?---That's correct.

You would change the word "date" so that it reads "data"?---That's correct. 12.02PM

The other location in which that happened?---Or perhaps that was in the other statement.

I think it might be. Perhaps before we go to the other statement, with that change being made to your statement of 29 May 2014, are the contents of the 12.02PM statement true and correct?---Yes, that's correct.

Where you express opinions in the statement, are they opinions that are honestly held by you?---They are, yes.

I tender the statement of 29 May. 12.02PM

#EXHIBIT 39 - Statement of Claire Richardson dated 29 May 2014.

MR ROZEN: In response to some further questions that were asked of you by the Inquiry, did you provide a 12.03PM supplementary statement dated 30 May 2014?---I did, yes.

Are there two changes that you would ask to make to that statement?---There's actually an additional change that I've picked up having listened to Dr Torre this 12.03PM morning.

Can you direct us to the part of the statement where that is, please?---In table 1 on page 9 of 30.

That's the occupational exposure criteria?---That's correct. If we look at column 4, so going from the left-hand 12.03PM side of the page we go across to column 4, we have a

heading, "NEPM air toxics, ADSDR and TQEC", I understand from Dr Torre's evidence this morning that the units of measurement for those parameters in column 4 should read micrograms per cubic metre, not parts per billion. 12.04PM

So the first entry is actually on page 10 of the statement for magnesium?---That's correct.

So where it says 95 ppm, it should be 95?---Micrograms per cubic metre.

We also make that change wherever we see parts per billion in that column?---In that column, that's correct. 12.04PM

Only in that column. Thank you. Is there also a typographical error in paragraph 16, the third line, the word "date" appears again?---That's correct.

That should be "data"?---That's right. 12.05PM

Perils of spell check. On page 25, just beneath paragraph 46, the reference to "Morwell East" in the footer to figure 1 should be "Morwell South"; is that right?---That's correct.

With those changes being made, is the supplementary statement dated 30 May 2014 true and correct?---There's one further paragraph that I understand from discussions with Dr Torre yesterday may not be strictly correct, and that relates to the requirement to locate an ambient air quality monitoring station in the Latrobe Valley. I understood from discussions with Dr Torre yesterday that, strictly speaking, on the population guidelines in the NEPM that it wouldn't be necessary for that to be in place. 12.05PM 12.06PM

Can you direct us to where that paragraph is?---That is paragraph 30 on page 16 of 30, where I state that,

"Based on the population in the Latrobe Valley a single performance monitoring station is required." I understand from Dr Torre it wouldn't be required based on the population. However, the EPA see the significance of the valley in terms of pollution and elected to site a monitoring facility there anyway.

Could that concern be addressed by inserting the words "not necessarily" between "is" and "required"? Would that satisfactory meet that?---It would, yes.

Okay, "is not necessarily required". With those changes, are the contents of the statement true and correct?---They are it, yes. 12.06PM

Once again, the opinions expressed are opinions that you honestly hold?---I do, yes.

I'll tender the supplementary statement. A separate exhibit I think perhaps. 12.07PM

#EXHIBIT 40 - Supplementary statement of Claire Richardson dated 30 May 2014.

MR ROZEN: You have attached to your supplementary statement, and perhaps also the first one, a detailed CV - I think it's only to the supplementary statement. Perhaps if we could briefly go to that, it's appendix A to the supplementary statement. You have qualifications, a Bachelor of Science with Honours from the University of London?---That's correct. 12.07PM

You have a Postgraduate Diploma in Air Pollution Control. Where did you obtain that qualification?---That was also a qualification I studied in London and it was under a curriculum defined by the Royal Society of Health in the UK. 12.08PM

You're a member of the Clean Air Society of Australia and New Zealand; is that right?---That's correct, yes.

Under the heading, "Gas and particulates research, measurement and prediction", you have undertaken research projects in a number of areas related to the subject matter of this Inquiry?---I have undertaken research into particulate matter, but mainly from mining sources, not necessarily from fire sources at mines. 12.08PM

So from controlled emissions, is that right, as opposed to uncontrolled emissions, or is that not the distinction you wish to be making?---It could be described that way, yes. 12.08PM

I noted the first dot point there, "Research project to determine emission rates of PM 2.5 particulates from emission sources at open cut coal mines." When did you engage in that research project?---That was commenced, it would have been around about the year 2000. 12.09PM

Which particular open cut coal mines were you concerned with?---There were a number of participants. One of the mines was operated by BHP in the central Queensland Bowen Basin, that was called Peak Downs, and then I measured also in the Hunter Valley; it was a mine site operated by Coal & Allied, I think it was called Hunter Valley No.1, but the names have changed over the years in the Hunter Valley. 12.09PM

I can't leave your CV without asking you something about a paper that you delivered, this is on the very last page of the statement, page 4 of the CV. It looks like a paper to the Queensland Environmental Law Society, so it's the fourth dot point under the heading, "Papers 12.10PM

and publications."

"Environmental Monitoring - Science or Black Art?", was a paper that you presented. What was your conclusion, Ms Richardson, science or black art?---A mixture of both. 12.10PM

Very diplomatic. I can relate to that as one who's newly arrived at trying to understand the science of environmental monitoring.

Before leaving documents, and I'll ask you about your statements in a moment, but have you also, 12.10PM pursuant to a concurrent evidence protocol determined by the Inquiry, have you also participated in a concurrent evidence process with the gentleman to your right, Dr Torre, of the EPA?---Yes, I have.

MR ROZEN: I'll ask both of you to have a look at a document 12.10PM headed, "Expert Witness Concurrent Evidence Protocol." Firstly, Ms Richardson, can you confirm that the document that has just been handed to you is the protocol that guided the discussions you had with Dr Torre. 12.11PM

MS RICHARDSON: Yes, this is the document that we followed, yes.

MR ROZEN: On your part, Dr Torre, even though you're described as "Mr" Torre there, this is the document that also guided those discussions; is that right? 12.11PM

DR TORRE: Yes.

MR ROZEN: The second document I'll ask you to have a look at is headed, "Joint Report of Ms Claire Richardson and Dr Paul Torre, 2 June 2014." I think it's attached to the first. Is that a four-paged report that you 12.11PM jointly produced as a result of those discussions?

MS RICHARDSON: That's correct, yes.

DR TORRE: Yes.

MR ROZEN: I'll tender the protocol and the report as one exhibit.

12.12PM

#EXHIBIT 41 - Expert Witness Concurrent Evidence Protocol and Joint Report of Ms Claire Richardson and Dr Paul Torre dated 2 June 2014.

MR ROZEN: In the protocol that is now exhibit 41, you were set certain tasks under heading (3), which were to identify and discuss technical issues concerning air quality in these proceedings, in the Inquiry, to reach agreed opinions on those issues; if that is not possible, to narrow the issues in which there is disagreement between the two of you. Thirdly, to identify those issues on which you agree and disagree and summarise your reasons for disagreement on any issue. Finally, to identify what action, if any, may be taken to resolve any outstanding issues that may remain. 12.12PM 12.13PM 12.13PM

You were asked to produce a joint report, being guided by that process, addressing the six matters which are set out under heading (4), "Joint report". I just ask that both of you understood that was the process you were engaged? 12.13PM

MS RICHARDSON: Yes.

MR ROZEN: Dr Torre?

DR TORRE: Yes.

MR ROZEN: If we can turn then to the joint report and if we can work our way through it. For both of you, particularly perhaps Ms Richardson, if there are 12.13PM

matters in your statements that you particularly want to take the Inquiry to in relation to these issues, then please indicate what those are as we go along and we'll bring those up.

The first question you were jointly asked to consider, "Do you consider that the appropriate ambient air quality monitoring standards were used during the fire period?" In your joint report you identify there were two sets of standards, the ambient standards and the response standards. Ms Richardson, can you just explain the difference between those two and what are you referring to? 12.14PM 12.14PM

MS RICHARDSON: The ambient standards are the standards setting the SEPP, ambient air quality, which reflect the national standards in the National Environmental Protection Measure also for ambient air quality. These are the standards that are set to protect the majority, if not all of the population, and they're used to guide both policy and research into the way we manage emissions both in the State and throughout Australia. So the intent is that exceedances of these standards signify where we need to do more investigation and they are at the point at which there could start to be health impacts on some portions of the population. 12.14PM

MR ROZEN: Perhaps if we can bring up from your first statement page 9, please. I know the same table appears in your first statement, Dr Torre. Is that what you're there referring to, Ms Richardson? You were asked to identify the standards for certain particular pollutants; is that right? 12.15PM

MS RICHARDSON: That's correct. So the reference in the

joint report to the ambient standards is a reference to the standards that are presented in table 1(a), but then also in table 2 where they're also adopted in the Victoria State Environmental Protection Policy.

MR ROZEN: One of the differences we see, correct me if I'm wrong, is that there's a reference to particulates as PM 2.5 in the first standard as an advisory reporting standard, but not in the Victorian table. Is that right? 12.16PM

MS RICHARDSON: Table 1(b) has the advisory standard, so that is something that was incorporated into the National Environmental Protection Measure in 2005, subsequent to the development of the original standard in 1998. 12.16PM

MR ROZEN: Can you just explain that to us? What was developed in 1998? 12.16PM

MS RICHARDSON: Table 1(a) has the NEPM ambient air quality standards and goals. Those standards were developed and implemented in 1998. At the time we had very limited knowledge about particulate matters smaller than 10 micrometers, although there was some evidence starting to appear that it could be an issue, so at the time the research community was trying to gather evidence and information about the finer particulate matter. Over time as some of that evidence emerged, the National Environment Protection Council decided to review that information, and on the basis of that they implemented a change to the original 1998 NEPM to incorporate an advisory reporting standard for PM 2.5. 12.16PM 12.17PM

The view at the time was, there was still insufficient evidence to enforce this as a health 12.17PM

standard in Australia, but the intent was to ensure monitoring was undertaken by the various EPAs so that the information became available to link to health studies to then determine whether or not it should be incorporated as a national criteria. 12.17PM

MR ROZEN: If we go back up to table 1(a), please, in the fourth column. You indicated that the goal at that time was to gather data to inform the development of a standard?

MS RICHARDSON: That's correct. 12.18PM

MR ROZEN: What's the opposite of an advisory standard, a mandatory standard?

MS RICHARDSON: A mandatory standard, yes.

MR ROZEN: Can you inform the Inquiry about what progress has been made since that time because it seems a long time to be (indistinct). 12.18PM

MS RICHARDSON: It has been a significant period. Many of the EPAs around Australia have been monitoring PM 2.5, not necessarily at all of their stations but certainly at some of those stations. So data has been provided or is now available in Australia. 12.19PM

Also over that time there have been many, many studies overseas and so international researchers have also built up a very large body of evidence relating to PM 2.5. 12.19PM

There was a recent review, I think it was in 2013, by the National Environment Protection Council as to the status of the current knowledge of PM 2.5, as well as a number of other aspects relevant to the current NEPM standards. One of the conclusions of that review was, we now have sufficient evidence that the PM 2.5 12.19PM

advisory standard should be implemented and perhaps even reviewed in terms of its applicability.

More recently than that, just towards the end of April this year, there was an announcement gazetted by the Commonwealth Government that the NEPM standard is to be amended to incorporate a regulatory requirement for compliance for a PM 2.5 standard, and that there will also be amendments to the PM 2, PM 10 criteria in the NEPM. 12.19PM

MR ROZEN: What's the likely timeframe for those developments? Is that in the gazettal notice? 12.20PM

MS RICHARDSON: The gazettal notice doesn't state the timeframe and I'm not a member of the committee that reviews this information. Perhaps Dr Torre would have more information than I do. 12.20PM

MR ROZEN: That sounds like an invitation, Dr Torre. Can you enlighten us further about that? Firstly, do you agree with that background information?

DR TORRE: Yes, I do.

MR ROZEN: What's the current state of play as of April this year, are you aware of those developments that Ms Richardson's referred to. 12.20PM

DR TORRE: Yes, very much. Like, it's been a work in development for quite a number of years.

MR ROZEN: Have you been involved in that process personally? 12.20PM

DR TORRE: In aspects of it?

MR ROZEN: Yes.

DR TORRE: In terms of, yes, just providing some scientific advice or evidence, Eco Victoria has been actively involved in that process. Our policy people are 12.21PM

probably better placed in terms of the process. I can't really say, but there's been a lot of work. I don't think it's too far away; it's definitely very close from my understanding.

MR ROZEN: This is a question directed to either or both of you, but is it your present understanding that when the mandatory standard emerges, it will be set at the same levels as the advisory standard, or are the standards likely to be different? 12.21PM

MS RICHARDSON: The gazettal states that there will be standards implemented but it doesn't necessarily state that they will be the ones that have been adopted as reporting standards. 12.21PM

MR ROZEN: Just so that we're clear, from the table we can see the advisory standard is 25 µg/m³ averaged over one day, and 8 µg/m³ averaged over one year. Am I reading that correctly? 12.22PM

DR TORRE: Yes.

MS RICHARDSON: Yes.

MR ROZEN: How do those levels compare to mandatory standards in other countries, for example in the United States? 12.22PM

MS RICHARDSON: In the United States the 24-hour average is higher, at 35 µg/m³, and the annual average is also higher at 15 µg/m³. Similarly in Europe there is a higher annual standard, but their 24-hour criteria is the same as the one that we have adopted in Australia as the advisory reporting standard. 12.22PM

MR ROZEN: The 25 micrograms?

MS RICHARDSON: The 25. China has recently mandated that they will also be implementing particulate standards. 12.22PM

As we're aware, it's rather a polluted country at the moment.

MR ROZEN: I think the citizens of Beijing will be pretty happy about that.

MS RICHARDSON: Yes, it's not mandated to become law, I believe, until 2016, but they are going to adopt a 24-hour average of 75 µg/m³ and an annual average of 35 µg/m³, so we can see there is some variance in those standards. Perhaps if we look at the criteria proposed for China, that there is obviously some appreciation that they would have difficulty meeting a much more stringent standard at the moment. 12.23PM 12.23PM

MR ROZEN: Does the literature indicate that there is a safe level of exposure to PM 2.5?

MS RICHARDSON: The literature supports a view that there is no safe level. 12.23PM

MR ROZEN: Do you agree with that, Dr Torre?

DR TORRE: Yes, I do.

MR ROZEN: And that obviously raises questions about how one goes about setting a standard. What are the sorts of considerations that are taken into account where the literature says no safe level, you've got to set a standard that assumes a safe level, what are the considerations that are taken into account by those that set such standards? 12.23PM 12.24PM

MS RICHARDSON: I might ask Dr Torre to respond to that as he has a role with the regulator.

DR TORRE: It's definitely a challenge. There's a whole lot of considerations in setting these promulgated air quality standards and they involve regulatory impact assessments, they take in the social impacts, they take 12.24PM

in the health impacts, so it's quite a number of different factors. The notion of no safe levels is obviously considered in that whole process, but there are standards across the world. It is a difficult concept to understand. 12.24PM

MR ROZEN: If we can turn then from the ambient standards to the response standards, that was the second matter that you considered in answering the first question. You jointly note the response standards were based on advice from the Department of Health and the standards 12.25PM were developed during the fire which was challenging and they were a work-in-progress. You were involved in the development of the response protocols, Dr Torre.

DR TORRE: Yes.

MR ROZEN: Obviously, it is challenging to develop those on 12.25PM the run in the course of responding to an emergency; do you agree with that proposition?

DR TORRE: Yes. Yes, I think that there wasn't a protocol there, so that was developed as the need arose.

MR ROZEN: You both make reference in your statements to 12.25PM contrast that position with the Bushfire Smoke Exposure Protocol which, Dr Torre, I think you were particularly involved in the development of that in Victoria. Over what period of time was that protocol developed?

DR TORRE: Well, that protocol sort of started, I think, 12.26PM after the 2006-2007 bushfires, so over a period of time was coming up with that protocol over those years, and more recently we also agreed with that protocol. More recently, we formalised the more recent protocol.

MR ROZEN: You say that it's pleasing the standards were 12.26PM able to be peer reviewed in such a short period of

time, but you go on to state that, "The response protocols overall should be reviewed with a focus on both the adopted thresholds as well as the appropriate operational responses that are triggered as each threshold is exceeded, and upon completion of the review, the protocol should be finalised and adopted for future events." 12.26PM

I want to ask you about that. In your second statement, Ms Richardson, at paragraph 52 on page 26, you note that extended emergencies relating to industrial type emissions and fires are less common than bushfires, which is what you've previously been talking about. You say, "As each of these types of incident has unique characteristics, for example air pollution type, concentration, exposure risk and variability of emissions over time, it is neither practical nor appropriate to develop incident specific protocols in advance." 12.27PM 12.27PM

There seems to be a bit of a tension between what you're suggesting in the joint report and the observation that you can't develop in advance a protocol for every likely contingency. Would you like to expand on that please? 12.27PM

MS RICHARDSON: Yes, that's correct. In an emergency incident there can be different emission sources involved, we can have chemical spills, we can have fires at different types of industrial operation, and so each incident is unique from that respect. However, there are some commonalities that we can try and address in a broader protocol. From that perspective, I do believe it's appropriate to continue to review the 12.28PM 12.28PM

protocols that were developed for the Hazelwood Mine Fire, but they would have to be in a broader sense perhaps and specific to the fire so that they would have some value in the future for other incidents.

MR ROZEN: Dr Torre, would you like to add to that? 12.28PM

DR TORRE: Yes, I think one of the things about the protocol is also the operational responses. Having a trigger level alone, you need more; how do you operationalise that trigger and how does that work out through an incident? So that was one of the learnings I think we 12.29PM learnt as we went along, is that, you have a protocol but then how do you actually activate it in an operational sense.

MR ROZEN: Just to be quite specific about that, what you're talking about is, you've got a particular reading; what 12.29PM are the consequences of that for the public health officials, what do they say to the community that they ought to do?

DR TORRE: Exactly and a whole gamut of things, you know, working through how is that taken through an incident, 12.29PM what are the considerations, what are the options? There's quite a bit of working and learnings in that in terms of getting to that part of it. It's the whole way that that protocol would be used and actually implemented in a response. 12.29PM

MR ROZEN: Just in relation to that, the Inquiry's heard evidence from a number of witnesses who have talked about the unique characteristics of the Hazelwood Fire, unique from the perspective of the firefighters, for the public health officials that had to give advice and 12.30PM so on. Do either of you have any observations to make

about that evidence that the Inquiry's heard? Was this a unique event in world terms or even in Australian terms?

DR TORRE: I would think so. I think that those levels, those carbon monoxide levels, were very unusual. I've never seen carbon monoxide levels at that concentration - not that I've seen a lot of coal mine fires, but I was really surprised at the elevated levels. Even when we tried to do a correlation between the particle levels and carbon monoxide, we couldn't find any pattern. It was really such a different fire. Carbon monoxide levels I've never seen before. 12.30PM 12.30PM

MR ROZEN: These are the levels on the weekend of 15 and 16 February you're talking about or otherwise?

DR TORRE: Just generally from the fire. You see, with carbon monoxide in fires you don't necessarily get such high levels. I just think it was this particular fire itself and the way the coal was burning and the poor combustion. I'm not quite sure exactly what was leading to that, but one factor could've been that brown coal's got a lot of water, and in that combustion process it was creating incomplete combustion of carbon monoxide, but that was really unique in that level of carbon monoxide. 12.31PM 12.31PM

MR ROZEN: Ms Richardson, anything you can add to that? 12.31PM

MS RICHARDSON: I agree in general with Dr Torre. There were some unusual circumstances associated with the fire. We do have a fair amount of monitoring information from Australian coal mines where we have the phenomenon spontaneous combustion, but clearly this fire was quite different to those sorts of events, so 12.31PM

the existing dataset we have does not relate to the sort of emissions that occurred during the Hazelwood Fire.

In terms of the duration, initially I thought the duration was somewhat unusual, but as I've reviewed the literature I've seen that certainly bushfire events do occur over extended period of time. So, perhaps we should be better at dealing with these longer term events based on our experience of bushfires, both here and in other countries such as the United States. So there is experience about longer term exposures as we experienced in this event, although the characteristics of the emissions were probably quite different to anything that we had experienced before. 12.32PM 12.32PM

MR ROZEN: I think the term of art is "a campaign fire", we have campaign fires in Victoria that can run, not just in Victoria but I'm familiar with the ones in Victoria that can run for weeks or even months. Is that what you were thinking about? 12.32PM

MS RICHARDSON: That's right, yes. 12.32PM

MR ROZEN: In fact, Dr Torre, was it the campaign fires that led to the Bushfire Smoke Protocol, the ones in the alpine region?

DR TORRE: Yes, exactly, in 2006 and 2000 we had extended spoke across Victoria for several months I think. 12.33PM

MR ROZEN: Yes, it was, yes.

DR TORRE: I even remember Melbourne being fumigated during the December-January period, so yes, that went on for a long time.

MR ROZEN: Just before we leave the question of the response protocols, are there overseas protocols or protocols 12.33PM

that are in place overseas that can assist in the process that you recommend, which is the reviewing of the protocols with a view to having them in place in the future? Perhaps, Ms Richardson, if I can start with you? 12.33PM

MS RICHARDSON: Yes, there are certainly protocols adopted in the United States that I have reviewed. In fact there was a copy of an extract from one of them attached to my second statement. Certainly, they have been developed to deal with wildfire, wildfire 12.34PM incidents as they call them in the States, so they would have relevance from a bushfire perspective, but we would need to determine how relevant that would be in Australian situations and to different types of fire or different types of incident. 12.34PM

I have found very little relating to responses based on CO concentrations, so that there was nothing available to inform the development of that protocol as far as I'm aware anyway during the incident.

MR ROZEN: Just in relation to that attachment to your 12.34PM statement, I think it's up on the screen now, is that what you're referring to, table 2 in your second statement?

MS RICHARDSON: That's right, yes.

MR ROZEN: It seems to refer to two measures - that is, AQI, 12.34PM can you help us with that acronym, Air Quality Index?

MS RICHARDSON: Yes, that's Air Quality Index, and that's a measure that's based on a range of parameters, it isn't just particulates, it's a number of other parameters as well. It does include things like ozone, nitrogen 12.35PM oxide, sulphur oxide.

MR ROZEN: We see the AQI values, and then on the right-hand side of the page we see the PM 2.5, 24-hour average. As the levels go up, so too does the response. Just applying the figures that we know from your joint report were recorded in Morwell during the fire, you talk about four days that were in the extreme - what you refer to as the extreme category; that is, greater than 250 micrograms. Applying this table, if we go back to table 2, that puts us into the second-highest category, does it not? 12.35PM 12.36PM

MS RICHARDSON: That's correct, yes. The first hazardous category, which relates to PM 2.5, 24-hour averages of 250 micrograms to 350.

MR ROZEN: The corresponding health advice here is to trigger health warnings of emergency conditions, the entire population is even more likely to be affected by serious health effects. It's very general, would you not agree? 12.36PM

MS RICHARDSON: It is very general, yes.

MR ROZEN: To be more helpful to a community, advice about whether they ought to - you know, not engage in outdoor activities or in fact relocate and so on, is the sort of information you'd want to see, wouldn't you, for a protocol? 12.36PM

MS RICHARDSON: That's correct, and certainly myself and Dr Torre agreed that, in the review of the protocols that were developed, that was key information that would be of benefit to include in finalisation of those protocols. 12.36PM

DR TORRE: From my perspective, there are quite a number of alerts, advisory, contact a nurse, don't do exercise. 12.37PM

I think what we're sort of recommending here is to go into that and look at that in a bit more depth, and is there anything in there that could provide some more input? Because there is quite a bit already, advice in terms of trying to deal with these situations. 12.37PM

MR ROZEN: I won't ask you anything specific unless you have something to offer about question (b), the location of the air monitoring stations; I think your positions about that are clear, that the best data was from the Morwell South location. 12.37PM

MS RICHARDSON: Yes.

MR ROZEN: If we go over to question (c) and you've already dealt with this, that is, you were asked whether the levels of PM 2.5 exceeded the relevant standard during the fire period and, if so, give details and you've set 12.38PM those out there. Just to give us some perspective, I want to focus on the four days that were in the extreme categories - that is, readings higher than 250 µg/m³. From your collective experience how high are those readings? Are they unusually high or have you 12.38PM experienced readings like that in other settings, particularly the highest of the readings which we understand to be 501 µg/m³?

DR TORRE: We don't have a lot of PM 2.5 data to compare it against other events. We're still trying to find out 12.38PM if there is - I know that Andy, my colleague who's a data analyst, was looking at visibility reduction during 2006 and 2000, and he did come up with an interesting statistic where there were the odd hour when you looked at the visibility reduction, that in 12.39PM the Wangaratta area, that was getting close to that,

but that's a visibility reduction, it's not a PM 2.5 measurement per se. So we don't have the PM 2.5 data from other incidents that compare.

MR ROZEN: Ms Richardson, can you expand on that at all?

MS RICHARDSON: I haven't seen any data from Australia that suggests or confirms that those values have been exceeded, but again, that's probably to do with the - firstly, the lack of monitoring data to date, but also where the monitoring stations are positioned that are currently recording PM 2.5. I have seen some data from overseas that suggests that those sort of values are reached, for example in China, in some of the developing countries; they're normally associated with meteorological conditions that allow the build up of air pollutants, particularly in cities, and so there is data available suggesting that there are communities in the world at the moment that do experience those concentrations from time to time. 12.39PM 12.39PM 12.39PM

MEMBER CATFORD: Could I just ask, which are the four days you're referring to there? 12.40PM

DR TORRE: They would be the 15th and 16th and I believe it would be the 21st and 22nd.

MR ROZEN: Could I ask then about the 26th and 27th. In the summary graphs we've got it would appear that there were two days that exceeded 250, if I'm reading the graph correctly. 12.40PM

DR TORRE: Yes, sorry, what you're reading there, I think, is the 24-hour rolling average. The day that's been presented is the 24-hour calendar day average compared directly against the advisory standard. So we have two reporting systems; one is to give us a 24-hour rolling 12.40PM

average to give us an indication of what the likely levels are on an hourly basis because we don't have an hourly standard. But when we do an assessment against an advisory reporting standard, we use the calendar day from 12 o'clock to 12 o'clock. 12.41PM

MR ROZEN: I just find that a little bit confusing because I think you said there were three peaks and you've given us two days for two of the peaks. What about the third peak, did that not count?

DR TORRE: Sorry, when I said three, I mean there was three events. Oh, it depends on the concentration, so the concentration for that third peak was below the 250, so that's been captured in that seven days. See how it's 21 days overall we talk about exceeding the advisory recording standard. Seven days are within that 157 and above, and then four days which is greater than the 250, based on those categories in that protocol. But in saying that, there is data there that's estimated, both estimated to measure. 12.41PM 12.41PM

MR ROZEN: Am I understanding you correctly, Dr Torre, the seven days, the ones that exceeded 157 would incorporate the three peak periods? 12.42PM

DR TORRE: Yes.

MR ROZEN: The four days, obviously only two of those peak periods, and is that the 15th, 16th and 21st and 22nd? 12.42PM

DR TORRE: Yes, it's the 21st and 22nd, or 22nd and 23rd I believe.

MR ROZEN: So in the period 26th-27th there wasn't the concurrence over 250 µg/m³ for a calendar day?

DR TORRE: For a calendar day. 12.42PM

MR ROZEN: I must say, the graphs don't seem to suggest

that, so perhaps we could just ask you to confirm that?

DR TORRE: We have got two graphs. We've got a calendar date graph and we've got the 24-hour rolling graph, so we could - - -

MR ROZEN: I'm not sure we have the calendar day graphs. Professor Catford, if you could indicate to us the graph that you're looking at and we could have that on the screen. That's from Dr Lester's statement. Does it have an attachment number or document number there? I don't immediately have it at hand? 12.43PM

MEMBER CATFORD: I think also it's in your statement, Ms Richardson, the PM 2.5 - - -

MS RICHARDSON: The rolling average is on figure 1 which is on page 25 of 30. That's the data I have plotted, it isn't the data from Dr Lester's statement. 12.43PM

MR ROZEN: There's also on page 22 of 27 of your first statement. There you've got the second and third event, but you haven't plotted the first event. It would seem to me that there was exceedances - well, I'm asking you, were there exceedances over the 250 trigger for the second and third event. 12.44PM

DR TORRE: For the second event, yes. The third event I think when we do the calendar date, it depends on the hours, it must come underneath that.

MS RICHARDSON: For the rolling average there were three hours on the 26th that exceeded the 250, and then that ran across from midnight to 1 a.m. with the balance of the exceedance occurring on the 27th and that would have affected the 24-hour midnight to midnight calculation. So because the exceedance occurred across midnight, that will have affected the number of days 12.44PM 12.44PM

then calculated as exceeding.

MR ROZEN: Why is a calendar day so important and not the 24-hour?

DR TORRE: It varies much from a - that's why we did the rolling 24-hour average to indicate that. It's just, that's the regulatory process that we operate under, so that when you do a kind of like an audit for the air quality against the advisory standard, that's the protocol that's in place and the convention used. So to say, how many days have exceeded an objective or standard, we say this amount and this is the formula that we've used. That's why we've actually done both to apply that concept. 12.44PM 12.45PM 12.45PM

MEMBER PETERING: Just to clarify, are we going to be getting a copy of the calendar graph?

DR TORRE: Yes.

MEMBER PETERING: Could we be provided with that, please?

DR TORRE: Sure.

MR ROZEN: Just before leaving that question, I want to ask you about the use that can be made of the Traralgon P10 data. This is something, Ms Richardson, that you refer to in your first statement, I think it is, starting at paragraph 29 under the heading, "Health impact of recorded PM 2.5 levels." 12.45PM

As I understand what you're saying there is that, because the Traralgon monitoring unit was recording readings from 9 February onwards, and we don't have any data at all from Morwell in those first two few days of the fire, it may be possible to make some estimates of the likely PM 2.5 levels on the 9, 10, 11 and 12 February based on the Traralgon PM 10 data? 12.46PM 12.46PM

MS RICHARDSON: Yes, that's right.

MR ROZEN: You say specifically at the foot of paragraph 36 that you could estimate the readings in Morwell based on the relationships with data from the other monitoring stations and other available data sources. 12.47PM

MS RICHARDSON: That's right.

MR ROZEN: Is that referring to the same thing? Have you been able, and I know you haven't had much time, but have you been able in the time available to have a go at doing those estimates? 12.47PM

MS RICHARDSON: To prepare those estimates requires a fairly detailed level of statistical knowledge, and my level of statistical knowledge is fairly basic. The additional data Dr Torre went through with me yesterday from DustTrak monitoring position for 16 February 12.47PM suggests that we had a peak on that date of somewhere around about 750 micrograms. Now, if we included that data in this graph, we could see then that we have three peaks and we're starting to build up a better picture statistically of the trends in the data. 12.48PM

To then calculate through the possible concentrations on 9 February, the only data we have is for Traralgon. I've completed a very basic correlation of the Traralgon PM 10 data with PM 2.5, and that resulted in a correlation coefficient of around about 12.48PM 0.7 which suggests there is a relationship in the data, it isn't a perfect correlation by any means, but suggests that there is a reasonable correlation.

A statistician with sufficient knowledge could, on the basis of that correlation and the PM 10 data from 12.48PM Traralgon, take account of variables such as the

weather patterns at the time, the patterns and the relationships in the dataset between Morwell East and Morwell South, and then back through to Traralgon to make some estimates as to what the PM 2.5 could be at Morwell South on the 9th when we see that we have a PM 10 peak of 100 micrograms at Traralgon. 12.49PM

MR ROZEN: Anything, Dr Torre, you can add to that?

DR TORRE: Yes, it's possible, but I think we might have a look at that. Yes, we'll have a look at that. I think when Claire did bring that up earlier, I thought, yes, that's an interesting point, because we did use Traralgon to base us to give us an idea of the bushfire impact, you know, on the following days. But, yes, look, we'll have a go at that. I don't know what we'll come up with, but yes, we'll have a crack. Sorry, that's our old CEO. 12.49PM 12.49PM

MR ROZEN: I think that's welcome. Just before leaving that, if we can take into account figure 2 there up on the screen, we see the reading, and I think, looking at it, that looks like on about 25 February, that peak reading of 500 µg, if I'm reading that figure correctly. 12.49PM

DR TORRE: It might be 22, because that's - 21-22 is when we get the bigger peak. It is difficult to read.

MR ROZEN: Did I understand, Ms Richardson, that you said that from discussions yesterday there were peak readings of 750 µg earlier on 16 February? 12.50PM

MS RICHARDSON: Yes, that's correct, based on the corrected DustTrak data that was referred to earlier by Dr Torre.

MR ROZEN: If that was plotted on this figure, that literally would be off the chart? 12.50PM

MS RICHARDSON: Yes, that's right.

DR TORRE: It was 700 and that was very much done under post-analyses. We didn't do that, we worked that out only - this is an estimate with quite a lot, you know, many, many weeks after the incident. 12.50PM

MR ROZEN: I understand that, but I think you told us earlier that your personal experience told you - - -

DR TORRE: It was high.

MR ROZEN: - - - on the day that you were in that sort of vicinity, is that fair to say, that it was very high? 12.51PM

DR TORRE: It was very high. But to try, visibility and put it to a number. You're talking about a 24-hour average. I drive through, I see an event, I see quite a lot of smoke, it's well below the one kilometre, I know that 500 kilometres is quite a lot of smoke. What 12.51PM that equates to in terms of a number, I couldn't say.

MR ROZEN: I understand, but that's a peak reading in the vicinity of 30 times the advisory standard, if one does the maths? Have I got that right? If it's around about 700, 750? 12.51PM

DR TORRE: Yes, I think we estimated - it's an estimate, around about 700.

MR ROZEN: Returning then to your joint report, you were asked some questions about the levels of carbon monoxide, this is question (d), "Did the level of 12.52PM carbon monoxide exceed the relevant standard during the fire period? If yes, please provide details of when this occurred and for how long." You say, "For the valid data available there were three days in Morwell South that the levels recorded exceeded the ambient air 12.52PM quality standard, 21, 22 and 26 February 2014."

You then go on to refer to unvalidated data from the CFA, "suggests that the ambient air quality standard is likely to have been exceeded on 15 and 16 February as well." That's the data that the Inquiry has heard from Mr Katsikis about, is that right Dr Torre? Do you understand that the CFA was conducting readings on that weekend? 12.52PM

DR TORRE: Yes, but the CFA, when they were doing those readings, they were taking spot readings so it was fluctuating quite a lot. What these ones are that we didn't have the data at the time was, we've gone back and download that data off their instruments and then tried to work out an average so we have the right average. So what Commander Katsikis was given at the time were those five minute spot readings. 12.52PM 12.53PM

MR ROZEN: What are the figures that are being referred to there? When you've gone back and done the work, what were the CO readings on those days, can you tell us?

DR TORRE: Depending on the site, I think it varied. There were two sites on the 15th and five on the 16th. High teens, 20s, 30s. Sorry, I can't recall. 12.53PM

MR ROZEN: I don't want you to guess. Is there a document in which that's recorded that you've seen?

DR TORRE: Yes, we've got an internal document that we've been compiling in terms of summarising our estimated data. 12.53PM

MR ROZEN: At the risk of sounding like a broken down record, I'm not sure that we've got that data. Those to my left I think are saying that we do. If you are able to clarify whether that's been provided, we'd appreciate it. 12.54PM

DR TORRE: Yes.

MR ROZEN: The next question you were asked, "What steps, if any, do you consider could have been taken to improve the ambient air quality monitoring in and around Morwell during the fire?" The first thing you both say, and this is really what you've said to us earlier, is that the, "The EPA air monitoring program is not designed for rapid response air monitoring. In not having this capability it did not have access inhouse to appropriate portable instrumentation to enact rapid deployment to measure the ambient air quality initially." 12.54PM 12.54PM

That's something that you both, if I can go to the first of your recommendations under heading (g), you jointly recommend the development of Statewide rapid response capability for air quality monitoring and assessment in Victoria for all significant incidents involving smoke." There's a reference to the Californian Air Response Planning Alliance which provides an example of a similar response. 12.54PM 12.55PM

Ms Richardson, that's something you're specifically familiar with, you refer to it in your report?

MS RICHARDSON: I do, yes. It's a protocol that was developed in California in response to - I won't say a similar incident, but an incident that had some characteristics which would be similar to the one that we're dealing with. There was an extended period of exposure, there were attempts to complete monitoring. The experience was that the information was not provided to the community within an appropriate 12.55PM 12.55PM

timeframe and in a way that allowed them to make decisions about their health status and the actions that they should take.

In response to that a multi-agency charter/agreement was formulated and the multi-agency group has drawn up protocols for monitoring that includes a number and positions that would be recommended for different events and the types of instrumentation to use and then how that information is communicated to the community. 12.55PM 12.56PM

They also tried to ensure that monitoring instrumentation is available to allow those actions to be put into place very, very quickly in the event of a major incident occurring. It was really intended for wildfire response, but equally it could have applied in the circumstance that we're dealing with. 12.56PM

MR ROZEN: The Inquiry has before it a document, exhibit 37 I think it is, Wildfire smoke: A Guide For Public Health Officials, July 2008. I think that's a document that we've asked you to examine as part of your preparation for giving evidence? 12.56PM

MS RICHARDSON: I have reviewed that document, yes.

MR ROZEN: It's up there on the screen. That's a separate document from the one you've just been referring to?

MS RICHARDSON: Absolutely, yes. This document is more akin perhaps to an expanded protocol such as the Bushfire Protocol and it goes through a number of steps and procedures that can be followed. 12.56PM

The organisation that I'm talking about is specifically designed to focus on air monitoring and that capability, and then providing that information to 12.57PM

the community.

MR ROZEN: If we can just quickly go to the table that's in this document which is at page 31. Have you looked at this as part of your examination? This is the table that sets out the trigger levels and responses, recommended actions? 12.57PM

MS RICHARDSON: I did review that, yes, and had a look at that.

MR ROZEN: Do you have any observations that you'd like to make about it? 12.57PM

MS RICHARDSON: One of the key differences to the Bushfire Protocol and the Hazelwood Fire Smoke Protocol that was developed is that they also incorporate trigger thresholds for 1-hour values and that's one of the key differences. 12.58PM

The other key difference is that they adopt the position of whether or not it's PM 2.5 or PM 10 that is high, the criteria will apply to both. What that means is that if you only have monitoring for PM 10 you still apply the thresholds. If you have both PM 10 and PM 2.5 monitoring data, you apply the thresholds to whichever is the most stringent. 12.58PM

One thing I did notice from this protocol, it doesn't necessarily tell you the time period over which you would then determine specific actions such as evacuation, and so it doesn't necessarily give us that guidance. 12.58PM

MR ROZEN: Dr Torre, is there anything you'd like to say? It's probably not a document that you've seen before today? 12.58PM

DR TORRE: That's the purpose of the recommendation, to

review this and try to develop that, and develop it for an Australian setting rather than just Victoria.

MR ROZEN: Perhaps it's an appropriate time to turn to your recommendations.

MEMBER CATFORD: Just before you do that, Mr Rozen, just in terms of acute periods of very high levels of PM 2.5, I mean it's brought out a bit in this protocol, could you just explain what the 24-hour rolling average is, and particularly during a 24-hour period what would be, say, the maximum level of a PM 2.5 that might have been detected in the Morwell Fire? Because presumably you're averaging out low and high levels and you're smoothing it in essence, but presumably there were very high levels of PM 2.5 detected in a shorter time period. Do you know how high, say, a 4-hour exposure might have reached, or a 2-hour or 1-hour in this case? 12.59PM 12.59PM 12.59PM

DR TORRE: I do recall, are you talking about just a 1-hour average?

MEMBER CATFORD: Yes, or if you can show - so within a 24-hour period, let's say take this one where we had 500, that's over 24 hours. Within that, presumably there are times when it was lower than 500 and above 500, so that my question is, how high did it actually go in a shorter period of time? 01.00PM

DR TORRE: I believe, this is stretching my memory, I think we may have got an hour result around about 1300. 01.00PM

MEMBER CATFORD: 1300, yes. And presumably that might continue - - -

DR TORRE: I need to check.

MEMBER CATFORD: I would be grateful to try to get an idea of the range within the high levels. 01.00PM

DR TORRE: I've got to go back to the data.

MEMBER CATFORD: Thank you.

MR ROZEN: If we could turn then to the recommendations that you make, a couple of which we've already addressed. This is (g) of your report, so we're very grateful that between you in the short time that's available you've come up with six recommendations. We've dealt with the first of those, the development of a Statewide rapid response. From your experience Interstate, particularly in Queensland, Ms Richardson, is the Queensland EPA, does it have that capability? Do you know? 01.01PM 01.01PM

MS RICHARDSON: I haven't worked in any of the EPAs but certainly my understanding is that both in Queensland and New South Wales the focus is as Dr Torre has explained, the focus is on the setting up and operating monitoring stations to determine compliance with the National Environmental Protection Measure Protocol. And because that is a regulatory requirement that is imposed on the States, the focus of their monitoring capability is towards that type of monitoring, which is using very fairly expensive and very high quality instrumentation that takes some weeks, sometimes months to install and operate. 01.01PM 01.01PM

I would be somewhat surprised if Queensland and even the New South Wales EPA had the capability to deploy instruments such as DustTraks, portable CO monitors, in a rapid way in this sort of event occurring. 01.02PM

MR ROZEN: I think you say, don't you, and I'm not quite sure where the paragraph is, Ms Richardson, but in your 01.02PM

perspective a reasonable amount of time to be on the ground doing those preliminary monitorings in an event like this is about 24 hours, you think, is a reasonable time for an environment monitoring agency to respond to an emergency like this? 01.02PM

MS RICHARDSON: That's based on my own experience. I'm often called out by industries that have had incidents on their premises and where they're looking for monitoring to be completed quickly, so that they can ensure that both their personnel and the community is 01.02PM not exposed to excessive concentrations. In those sort of circumstances we're asked to provide and install equipment very, very quickly, and generally we can achieve that the next day if we have the instrumentation available. 01.03PM

MR ROZEN: That's obviously the big if. I'm wondering if there isn't scope - maybe Dr Torre you're better placed to respond to this - for some Interstate cooperation so that, in the way you informally were able to access material from Tasmania, the various State bodies 01.03PM jointly put resources in to having this rapid response capability so that it could be deployed Interstate if need be?

DR TORRE: Look, I think all options should be considered. Really, that's what happened in this fire. The Fire 01.03PM Brigade actually sourced - when the Morwell community monitoring started, they started sourcing Area RAEs from Queensland and even from the United States. So, yes, I think all of those options should be considered in terms of rationalising and making resources 01.04PM available.

I think one example is the oil spill. You know how they have different centres for responding to big oil spills, and it's located around Australia and they all get those resources when they need them; that's a great idea. 01.04PM

MR ROZEN: That could be a good model for this. We've dealt with the second of your recommendations which is to use a panel of experts to review the carbon monoxide and PM 2.5 protocols with a view to developing agreed levels on a sort of generic basis that could be 01.04PM deployed in future events.

DR TORRE: Sorry, it's not just carbon monoxide and PM 2.5, it's also just the required emergency protocol per se. I think we need to keep it, not just to CO and PM 2.5, but are there other emergency protocols and things we 01.04PM can learn and apply in emergency events.

MR ROZEN: I'm very conscious of the time, and we can all read the four further recommendations that you make, but I invite you, if there's anything in particular that you want to say about those recommendations, to 01.05PM further explain them. Perhaps I can start with you, Dr Torre, is there anything you want to add to those remaining recommendations?

DR TORRE: Just the rationale behind the statewide smoke harmonisation plan. One of the practicalities of that 01.05PM is that smoke really is prevalent in Australia; you know, bushfire smoke, burning smoke, it's probably one of the biggest air quality impacts, pollutants. It's very hard at times to get away from the smoke in Regional Victoria or Regional Australia. 01.05PM

There's quite a lot of good work in terms of

triggers and advice and protocols and we saw that in Morwell South in terms of - you know, the Health Departments and the Education Departments trying to come up with protocols in place that are planned and they can roll out when we do have these incidents to minimise harm. Because sometimes you just can't stop smoke no matter what level it is and going inside a building or respite and all that. 01.06PM

It's really got to be, as we're finding through the Morwell South, you really need to have the systems in place and you've got to have all the networks working together and the best way to do that, I think, is to minimise harm because smoke is just part of Australia. 01.06PM

MR ROZEN: Ms Richardson, anything further? 01.06PM

MS RICHARDSON: The only thing I would say is that, it's incredibly important that the community feels that they have the power to monitor for themselves and that some of these recommendations we've made are to provide alternate ways where the community can then take the measurement that is reasonable - it isn't necessarily accurate in the concerns of the monitoring that perhaps the EPA would complete, but it has enough validity for them to inform their own actions and to make choices about the way they behave when there are high air pollution events. 01.06PM 01.07PM

In the same that we get cards that advise us of what to do in a bushfire emergency, we could have some sort of system that allows some basic monitoring to be completed by individuals with an understanding then of how they can react and respond to the levels that they 01.07PM

have determined.

MR ROZEN: Thank you.

MEMBER CATFORD: I just had one very short question about your modelling capability, Dr Torre, and I think we're all very impressed with the level of science and expertise you have. The reason we're seeing these fluctuations at Morwell is principally, and correct me if I'm wrong, because of the wind direction. The mine is producing these pollutants; okay, the firefighters may be varying that but it's shoving it out and, depending on where the wind blows, communities are hit by that, is that? 01.07PM 01.07PM

DR TORRE: There's that obviously, but there's also, what we find in these scenarios is, it was also during those light wind periods and we were getting inversions and so it was sort of bubbling over. 01.08PM

MEMBER CATFORD: That's really what I'm alluding to, that in terms of anticipating where this smoke will hit and its intensity, is it possible to actually conceive of a forecast modelling system where you can predict where the smoke is going and the intensity, in the same way that I think we're very impressed with the Fire Commissioner's forecasting of where the bushfires are going to hit and the intensity? 01.08PM

DR TORRE: Yes, there's two comments I'd make about that. One is that during the mine we tried to source as much modelling as we possibly could. The Bureau of Meteorology have got a smoke model, so they provided this, but the CFA has already got a HAZMAT model called ARGOS and there was quite a lot of ingenuity in trying to work out where those plumes are. 01.08PM 01.09PM

So, in terms of coal mine fire, it's worth developing and trying that, and we're trying to use that. But in a bigger sense there's now quite a bit of research now being done by the CRC bushfire, and one of the roles there is trying to understand and to get better at smoke modelling, especially from fires, so they can where a lot of that activity is. 01.09PM

It's quite an exciting piece of work that, hopefully in the next two years, it will involve a number of universities and the Bureau of Meteorology to be able to develop the capacity of forecasting that more accurately, so it's definitely in the pipeline. I think it's exciting times. We actually lost a colleague to that research project after this fire in terms of modelling for bushfire smoke. 01.09PM 01.09PM

MR ROZEN: Members of the Board, I note that it's 1.10, Mr Burns tells me he's got two minutes of questions.

CHAIRMAN: That's fine, we'll just extend the hour, may be a better way; I think I prefer to do it that way.

MR ROZEN: That will then complete the evidence of these two witnesses. 01.10PM

<CROSS-EXAMINED BY MR BURNS:

MR BURNS: Very briefly, the first question to Ms Richardson. You describe 24 hours as being the appropriate time at which you thought it would be reasonable to be on the ground providing a response; is that right? 01.10PM

MS RICHARDSON: That's correct, yes.

MR BURNS: Has your company ever been called into a major environmental hazard? 01.10PM

MS RICHARDSON: Not on the scale of the Hazelwood Mine Fire,

but I have been called into one incident where a major inner city building in the Brisbane CBD as evacuated; the Emergency Services were there and I was called to complete monitoring on behalf of the organisation that owned the premises that had caused the incident. 01.10PM

MR BURNS: In that circumstance, did you know exactly what you'd be monitoring for?

MS RICHARDSON: We understood that it was volatile organic compounds.

MR BURNS: How many people attended? 01.11PM

MS RICHARDSON: I went myself.

MR BURNS: So you were able to effectively load up your car and go?

MS RICHARDSON: Yes, that's right.

MR BURNS: Your reference to 24 hours being reasonable, that obviously depends on availability of equipment? 01.11PM

MS RICHARDSON: Absolutely, yes.

MR BURNS: It depends very much on the size of the equipment?

MS RICHARDSON: You would normally use smaller equipment that would be portable for this sort of monitoring, but the issue is really having that equipment available and having it in service, if you like, so that it's been calibrated to the extent that you know it will be reliable when you take it out on site. 01.11PM

MR BURNS: My question is a different one, it's about the size of the equipment. Obviously, if it takes trailer loads to get it down there, it's a bigger task, isn't it?

MS RICHARDSON: That's absolutely right, but that's why you wouldn't necessarily use that sort of equipment in an 01.11PM

emergency situation for a 24-hour response. You'd generally use smaller instrumentation that is truly portable and wouldn't require a large trailer to transport to site.

MR BURNS: And that relies on the availability that equipment? 01.12PM

MS RICHARDSON: That's absolutely right.

MR BURNS: And the capability to respond quickly?

MS RICHARDSON: Exactly, yes.

MR BURNS: It also depends, doesn't it, on whether the equipment is calibrated to those particular circumstances and what you're searching for? 01.12PM

MS RICHARDSON: In some respects, yes. Certainly in the incident that I was involved in, we had the capability of taking out sample devices that could both screen for the VOCs and then take samples that could be subsequently analysed to look for a wide range of compounds. 01.12PM

In the situation of particulates, instruments such as DustTraks can be available. Even if you don't specifically calibrate to the source, they give some indication as to what the impacts are and, as Dr Torre has done, subsequently you can then calibrate if you have other referencing instruments available to complete that calibration. 01.12PM

MR BURNS: And when you're doing that subsequently, it takes time?

MS RICHARDSON: Yes, it would do because you need to match that the data up to determine the correlation.

MR BURNS: Thank you Ms Richardson. Can I just ask you Dr Torre, when were you first contacted by the EPA to 01.13PM

provide assistance to the Incident Controllers?

DR TORRE: I was contacted on the 11th.

MR BURNS: When did you arrive on site to give that assistance?

DR TORRE: On the 12th. 01.13PM

MR BURNS: When were you providing your first information to assist the Incident Controller?

DR TORRE: I would have been provided information probably by the 13th.

MR BURNS: So that's a day later? 01.13PM

DR TORRE: Yes.

MR BURNS: In those circumstances Ms Richardson, what do you say about that? Reasonable?

MS RICHARDSON: In terms of Dr Torre being called out and then given data, yes. But my certain is that we have 01.13PM no data earlier in the event when the larger impacts could have occurred, and perhaps our recommendations addresses that issue in terms of having a monitoring system available that could be deployed more rapidly.

MR BURNS: When you say earlier in the event, you understand 01.13PM he wasn't contacted until the 11th?

MS RICHARDSON: That's right. The deployment of monitoring is not necessarily the sole remit of the EPA. Certainly in the situation that I was involved in in the Brisbane CBD, the HAZMAT unit of the Fire Brigade 01.14PM had also completed VOC monitoring before I entered the premises and they would not let me enter the premises until they were satisfied that it was the safe for me to enter.

MR BURNS: You understand the fire only started on the 9th? 01.14PM

MS RICHARDSON: Yes, I do.

MR BURNS: Mr Chairman, earlier I tendered a letter, it wasn't given an exhibit number. The letter from the VGSO to the Board dated 22 February, could that please be given an exhibit number?

CHAIRMAN: Is it appropriate to just treat that as part of Dr Torre's statement? 01.14PM

#EXHIBIT 38 - (Addition) Letter from VGSO dated 22 February.

MR BURNS: Yes, happy for that to occur. The emails have now been provided, I understand, that were sought from Dr Torre. 01.14PM

#EXHIBIT 38 - (Addition) Emails sought from Dr Torre.

01.15PM

MS RICHARDS: I should just say by way of clarification in relation to this letter, with the letter came a CD that had a large amount of data on it. We have had some difficulty identifying which of the specific data we've called for is on that CD, and it does appear that the readings taken from the CFA's handheld CO monitors were not on that CD and we've been unable to identify data prior to 20 February from the DustTrak. 01.15PM

What we propose to do is have a discussion with our learned friends over the lunch break and try to identify what we have and what we don't have and I'm sure there's a way through. 01.15PM

CHAIRMAN: Yes. Perhaps we'll adjourn now until 2.15 rather than 2.

<(THE WITNESSES WITHDREW). 01.15PM

LUNCHEON ADJOURNMENT

UPON RESUMING AT 2.15 P.M.:

MS RICHARDS: We had proposed to call two community witnesses today, Vickie Hamilton from the Asbestos Council of Victoria and Gippsland Asbestos Related Diseases Support Inc and also one of the members of that organisation, Ray Whittaker. Unfortunately, word's come through to us over the lunch break that Mr Whittaker's unwell and unable to attend today, so I propose simply to tender his statement. I'm told by my learned friends there were no questions for him in any event and proceed with calling Ms Hamilton. So, if I could tender Mr Whittaker's statement. 02.20PM 02.21PM

#EXHIBIT 42 - Statement of Ray Whittaker.

02.21PM

MS RICHARDS: And I call Vickie Hamilton.

<VICKIE DOROTHY HAMILTON, sworn and examined:

MS RICHARDS: Ms Hamilton, we'll start with some easy questions. Can you please state your full name and your address for the Inquiry?---My full name is Vickie Dorothy Hamilton and I live at 56 Darlimurla Avenue, Newborough. 02.22PM

You are the Chief Executive Officer and also the Secretary of the Asbestos Council of Victoria?---I am.

And of the Gippsland Asbestos Related Diseases Support Inc?---I am. 02.22PM

You have made a statement to the Inquiry. You have a copy of it there in front of you, and I understand that you read it recently?---Yes.

Were there any corrections that you wanted to make?---No, I have already made all the corrections. 02.22PM

Is your statement true and correct?---Yes.

I tender that, Your Honour.

#EXHIBIT 43 - Statement of Vickie Hamilton.

02.23PM

MS RICHARDS: Ms Hamilton, you live in Newborough, have you lived in the Latrobe Valley for most of your life?---For 54 of my 56 years, yes.

That's most of were your life, so you grew up in the region?---I did, yes. 02.23PM

You're here in your capacity as the Chief Executive Officer and Secretary of those two organisations that we mentioned, both of which relate to asbestos. Is there a particular reason why you're involved in those organisations?---My involvement became through my 02.23PM grandfather and my father who both passed away with asbestos-related disease.

Tell me about your father. Did he work in the power industry here in the Latrobe Valley?---He did. He was an immigrant who came out with his family at the age of 02.23PM 18 and he was finishing off his apprenticeship at the SEC. All of my family had jobs at the SEC and my father worked there for 38 years as a fitter and turner and then later on to be a supervisor.

At any particular power station?---Yallourn A, B, C, D and 02.24PM E.

Your father was diagnosed with an asbestos-related disease?---He actually had asbestosis at the age of 54 years and he battled on with that and the SEC actually put him out on a disability pension at 54 and 02.24PM he passed away at the age of 67 with asbestos-related

lung cancer.

That experience has driven you to work supporting other families who experience the same?---Very galvanised about looking after people with asbestos-related disease. 02.24PM

Can I ask you about these two organisations, Asbestos Council of Victoria and GARDS, as it's known. Are they different organisations?---No, they're one and the same. The Asbestos Council of Victoria was taken on probably March of last year to actually acknowledge the 02.25PM fact that we as an organisation do a lot of asbestos issues in and around, not just in Victoria but nationally and overseas, so we needed to actually acknowledge the fact that we're doing a lot of advocacy as well as support of our people in Gippsland, so 02.25PM that's why we've got the two names to actually show the advocacy side as well as the support side.

So the Asbestos Council of Victoria is the advocacy side?---That's right.

And the support side, which I want to talk more about with 02.25PM you today, is GARDS?---(Witness Nods).

GARDS was established in about 1991?---That's correct.

So you're well into your third decade of operation now?---That's right.

About how many members do you currently have?---We've got 02.25PM about 200 financial members, but equate that with their families and we've got well over 1,000 people that are reliant on information and support.

Is membership open to someone who is suffering an asbestos-related disease or is it a broader base than 02.26PM that?---It's open to anybody, it's open to people with

asbestos-related disease as well as the broader community. I would say that two-thirds of our membership is made up by people affected by asbestos.

If you can tell us a bit about what GARDS does for its members and their families?---On the support side we actually have medical equipment, we loan out free of charge to anyone in Gippsland who has an asbestos-related disease and who becomes a member of our Association, a whole $3 to join, and they are entitled to have any of our medical equipment, that can be oxygen concentrators, conserving devices, wheelchairs, shower chairs, we try to look after them in any way we can. We have a relationship with the Latrobe Valley Palliative Care fundraising, where we can actually access beds and anything else that people need to stay at home. 02.26PM 02.26PM 02.26PM

There's a social side to GARDS as well?---Most definitely, we have a support group meeting once a month, we also have a night meeting and we actually take excursions in and around the Gippsland area and we will have speakers of interest who come along to talk to our members, and the members drive the speakers that we have to come along to talk. 02.27PM

In paragraph 5 of your statement you give a fairly confronting statistic which is that in the Latrobe Valley and Gippsland there is seven times the average number of mesothelioma diagnoses compared to the rest of Victoria. Is that based on the Latrobe City municipality or is it a broader area?---That was based on the Lung Function Review done by the Victorian Managed Insurance Authority to find out their liability 02.27PM 02.27PM

into the future, and that was the outcome or the major outcome for me, that there was seven times the State average in Latrobe Valley for mesothelioma, and for every one mesothelioma, there are two to three asbestos-related lung cancers and you can get up to eight or so other asbestos-related diseases from that, so it's quite extensive. 02.28PM

For the benefit of those who aren't familiar with asbestos-related diseases and what they involve, mesothelioma is the nastiest of a nasty set of diagnoses; it's a malignancy?---It is; it's a tumour that wraps itself around the lung and actually grows, and as it grows it actually strangles the lung. 02.28PM

The average latency period between exposure or inhalation to asbestos dust and diagnosis is about 35 years?---Yes, on average for that, yes, from diagnosis. There are other mesotheliomas too, it's not just pleural, there's peritoneal which wraps it itself around the stomach lining. There's also pericardium as well, and a couple of other ones, but they're the major ones. We've had members who have had pleural mesothelioma and peritoneal at the same time, so that's a double-whammer as far as I'm concerned, it's tragic. 02.28PM 02.29PM

The only known cause of mesothelioma is asbestos toss?---That's correct, 99 per cent. 02.29PM

It's not curable?---No, there's no cure.

The median life expectancy from diagnosis is about 18 months?---Yes. We do get the ones out of the norm that can last up to 10 years but they are rare.

That's the worst of the possible range of diagnoses but you've also mentioned asbestos-related lung 02.29PM

cancer?---Yes.

Asbestos being a known carcinogen. There's a peculiar relationship between exposure to asbestos and smoking when it comes to the risk of lung cancer. Are you able to explain that so that we can understand it?---In my layman's terms because I'm not a medical professional, but in my layman's terms over the time I've been involved in GARDS they have a synergistic effect, so if you're smoking and you've been doing any sort of asbestos removal and have had no protection, then you are 10 times more likely to get an asbestos related disease from that. 02.30PM 02.30PM

Other asbestos-related diseases that aren't necessarily fatal are asbestosis you've mentioned. Well, asbestosis is a progressive disease and it actually does become fatal in the end, so you can count that one in with the others, it just takes a bit longer to do its job. It basically does the same thing. Asbestosis starts in the bottom of the lung generally and it slowly goes up and it hardens the lung as it goes, and so the ability to get any capacity for breathing gets less and less and less and it has the same effect as mesothelioma in the end, they just cannot breathe. 02.30PM 02.31PM

Pleural plaques is only a sign of asbestos-related disease and you may not go on to get anything else from the pleural plaques; you can be exposed and never go on to get anything else, but generally asbestosis, mesothelioma, they will kill you. 02.31PM

You said that there's seven times the average, the Victorian average of mesothelioma diagnoses in the Latrobe Valley. What in your view is the reason for 02.31PM

that?---This is a terrible one, but it is the power stations, because majorly the power stations had a lot of asbestos in them and the old power stations at Yallourn A, B, C, D and E were full of it, the same as Hazelwood, they all had asbestos in them. Prior to 02.31PM probably 1980 it was just used any other way, any other material would be used, with no safeguards to the workers, and I've heard that time and time again from the workers themselves.

Your membership either have or are living with or family 02.32PM member of someone with a lung condition of some kind which puts your membership in one of the groups that was vulnerable to the smoke that we experienced in Morwell in February and March of this year. After the fire started burning in the mine on 9 February, what 02.32PM were the first calls that were made on GARDS by its membership?---Basically, they were moving out. Most of my members were moving out or seeking extra oxygen, and trying to find out details from me as to how toxic the smoke was, and of course I couldn't find that out 02.33PM anywhere, I was trying to access information on a website or whatever, I actually couldn't find much else about it. I thought, well, I'll do some research online and do what everybody else does, do Mr Google, and I was finding lots of horrific things on there and 02.33PM I just said to them, you either get out, they were the phone calls, get out or hunker down and try and minimise your exposure to that smoke.

How early in the fire were these requests to you for information?---Well, pretty well as soon as they 02.33PM started smelling the smoke because it got quite

horrendous, especially for people close to the mine. I had members who lived in Sinclair Avenue which is pretty close to the mine and they were inundated, so they moved out totally.

We're about to get the map of Morwell up on the screen. Can you point that out?---There it is, just here. 02.33PM

So on the western side of town just south of Commercial Road?---Yes.

You said that you were trying to find information to provide to your members about the smoke and what was in it. 02.34PM Where did you look for information?---On the website mostly. I did try the EPA website but I couldn't find out too much on there and it was quite buried, it was very difficult to find stuff on that website. I actually accessed some information, and it came from 02.35PM the EPA in America actually, and they were talking about fire and smoke and what can come out of the ash, which is called fly ash, and it was horrendous. By the time I finished reading that I'm thinking, oh my god, you know, what is in this smoke? A lot of heavy 02.35PM metals, beryllium, all sorts of things, arsenic, and I was just horrified, and it was coming unadulterated out of the mine and I'm thinking, oh.

The things I was finding out was that it could affect children, it could affect organs, all sorts of 02.35PM things and I just thought, where's this information? This isn't being told to us, why aren't people being moved out?

Of course I did have a conversation with someone at the hospital and I said people should be being 02.35PM evacuated and they said, "No, no, we don't use that

word, the Department of Health only use 'relocation', they don't use 'evacuation'. And I went, "Well, I don't care what word you use, but people need to be moved out because this stuff is very dangerous."

You've told us that a number of your members chose to leave Morwell at an early stage in the fire, and there were other members who chose not to or - - -?---They couldn't leave. They were in a situation very much like Ray, whose testimony has been tendered, they have responsibilities here, they couldn't go. Ray is a unique one, he looks after his disabled son, so he couldn't just take off and leave. He couldn't afford to in the first instance and he tried to access relocation money when that became available, but he felt so guilty taking it because Ray didn't live on that side, on the divide side of the mine fire, so he lived on the other side down on Vary Street - do you need me to show you where Vary Street is? 02.36PM 02.36PM 02.36PM

I think we know where Vary Street is?---He lived down there, and he's told me that when he tried to access relocation money he was made to feel guilty and that they didn't believe that his son was disabled, even though he had concession cards that showed that. So he took $500, I think, that he had to start with and he never went back. And so, they didn't take him and his son - because he couldn't leave his son at home so he took his son over to Moe as some of the schools did to try to get some relief that way for over a week, but he still had to pay his son and his daughter-in-law something towards food and all those sort of things, so that $500 didn't last long. 02.37PM 02.37PM 02.37PM

And he's set all this out in his statement?---He did.

There was an initial request from members for information about smoke and you've told us how you went looking for that information and initially didn't find it from Victorian Government sources so went looking further afield. Was there other assistance that your members asked for and that you were able to provide?---Yes, oxygen was the main cab off the rank, but most of my sufferers are very seasoned, they know how to look after themselves. They didn't access doctors because they knew the doctors couldn't do anything for them. What they did do, though, was ring up their air suppliers and ask for extra oxygen to be brought in, and I have had a conversation with the oxygen supplier in the area and they said they were run off their feet, and on top of that, they found it very difficult to get the oxygen to them because there was fires going on at the time. They had to run the gauntlet of fires and roads that were closed as well as get oxygen to people that were requiring it. 02.37PM 02.38PM 02.38PM 02.38PM

In paragraph 14(b) of your statement you give an example of a confusing message, being a message from the Chief Health Officer that there would be no long-term effects of the fire. Why was that message confusing for you?---Because my understanding is that there's been no fire like this that I know in Australia, so how can you say there's no long-term health effects when I've just been on a website telling me of all the things that are in that smoke? How can anybody say there's no long-term health effects? And that statement was being made time and time again. I had members ringing me up 02.39PM 02.39PM

saying to me, "Is there a study out there that shows that?" I'm going, "No, I don't know of one, I have no idea." And that was being said on quite a number of occasions and so that sent mixed messages of how dangerous was this smoke? 02.39PM

I'm guessing that you and your members have reason to be cautious about long-term effects of inhaling particles?---Definitely, and if you talk to any of my members, people in positions of power have always said to them, "Trust us, we're looking after you, you'll just have to have faith." Well, I've got a whole membership that had faith in people in powerful places, and they're dying, so we don't trust anybody any more, we find out for ourselves. 02.40PM

You've also made comment on the timing of the announcement on 28 February that people in vulnerable groups, which included your members, should voluntarily relocate or temporarily relocate. Why was the timing an issue?---Because the fire had been going on such a long, long time. You know, I would have expected somebody in a position of power to have come up and decided, well, this is just too great, we need to get people out of there, because they can't be experiencing that sort of fire and smoke. So I was just blown away at the fact it took so long to make those decisions. 02.40PM 02.41PM

But there was also an issue about the fact that the announcement was made on the Friday afternoon; you've told us in paragraph 14(c) there?---Some of my members told me, they've rung me up and said, "Oh, they're actually going to pay relocation money and we can access it." I said, "Oh, yes?" And they said, "The 02.41PM

trouble is, the place is closed." I said, "Isn't it raining over the weekend so that they can get people out?" Well, "No, we're closed in normal business hours." So I had people that were very, very confused and very distressed at the fact that they had to wait until over the weekend to get to actually put their case forward to submit for relocation money. 02.41PM

You make a remark in paragraph 16 of your statement that you are actually not aware of members going to the doctor because of the increase in their symptoms. Why would they not go to a doctor?---Mainly because they already are controlling their own symptoms, they know what they need to do to relieve their symptoms, and most of them, there is no cure for what they're suffering with, so the extra smoke on top just made their situation just that much more untenable. So, they knew what they needed to keep them going through all of that and that was to either lock themselves in and keep their air conditioning and their oxygen up or get out of the area. 02.42PM 02.42PM 02.42PM

The last thing I want to ask you about is the clean up. There is a clean up package that's been made available and you've made a comment that it was inadequate. Why was it not adequate?---It was like feeding strawberries to an elephant for goodness sakes. A bucket with, I think it had four masks in it with some gloves and a couple of washing vouchers, for the magnitude of the fire that took place with all that smoke and ash, and the ash was horrendous. I had members that are still physically able to clean their places saying to me that they were washing off patios and all sorts of things, 02.42PM 02.43PM

and the ash was this thick on things, and this is in and around the Morwell area. They were washing them on a regular basis, nearly every day they were washing. The bucket had masks in it and, hey, yes, it showed you how to put the mask on, and, gee, we know all about masks in our organisation, but it didn't tell them what mask was for what, so they had no idea which mask in the package was for what sort of thing they were supposed to be wearing it for, which was - and the gloves. As Ray had shown me when he brought them in, the gloves are extra, extra large and his hands are only very small - if you knew Ray, he's very small, so he had this small hand with this great big glove that was falling off and the gentleman beside him that was accessing a bucket, he got the small one and he had a huge hand, so there was no rhyme or reason to what was in the bucket. The people that were giving out these things didn't even know to tell the people which mask was for what job. I thought it was totally inadequate for the situation, it was just - I don't know, probably to be seen to be doing something. 02.43PM 02.43PM 02.44PM 02.44PM

Then the last issue I'd like to ask you about was the proposal to include in the clean up package high pressure hoses for use. That was a proposal that was of some concern to you; why was that?---If anybody knows anything about high pressure hoses, they are dangerous in certain situations. The EPA will actually fine you if you use a high pressure hose on anything to do with asbestos products. So, if you were getting up to actually high pressure hose the siding on your house and it's got paint on it, well, the high pressure hose 02.44PM 02.45PM

will peel the paint off, it will peel anything off, which means it is taking it back to raw AC sheeting. They could have been getting up on their roofs to high pressure hose roofs. They could have exposed the whole neighbourhood with a high pressure hose on a roof made of asbestos. They were being encouraged to clean solar panels, and the high pressure hose, well, it is illegal. 02.45PM

I can't understand why Latrobe City actually even went down that path because Latrobe City actually get in there and help EPA fine people who actually use high pressure hoses on roofs or anything else and expose the rest of the community. I thought it was a really stupid thing to do. 02.45PM

I should say, to be fair, there will be some evidence later this week both from Latrobe City and about the Department of Human Services about the design of the clean up package but I won't put that to you; you just know what was being provided and what was being offered?---It was very inadequate for what people were expected to do with it. 02.45PM 02.46PM

You were alarmed about the proposal to make high pressure hoses available; what did you do about that?---Well, I actually didn't know that Latrobe City were going to recommend high pressure hoses until a radio presenter rang me up, said they'd had a few concerns from the community about the use of high pressure hoses on asbestos in houses. I said, "No, you can't use them", and it was the ABC Radio actually, and I said, "You can't use those", and they said, "Would you be willing to say that on the radio?" And I said, "Well, sure, 02.46PM 02.46PM

because I don't want anybody being exposed to asbestos." So I went onto the radio and I actually answered the comments, answered the questions that were asked of me and we had a conversation around high pressure hosing and asbestos. They got quite a few comments, so I believe, after the radio program, so there was a lot of people listening. 02.47PM

Subsequently the high pressure hoses were not included in the clean up assistance available?---Russell Northe, a member for Morwell, actually rang me up the next morning and had a conversation with me about high pressure hosing and him and I discussed that for probably 20 minutes on the phone. Then he was, so I believe, meeting with John Mitchell to have a conversation, and I said, "Can you please ask him to stop what he's doing about high pressure hosing." And I believe that did stop with their conversation that morning. 02.47PM

Thank you, Ms Hamilton. I have no further questions. Do Members of the Board have any questions? 02.47PM

MEMBER PETERING: Thank you, Ms Hamilton. What would you have liked to see on a website that would have given you confidence in being able to communicate that information to your members? So what sort of information were you looking for?---I was looking for a directive from the Department of Health and EPA to actually tell us what they're actually finding from the fire. I sort of believe the air monitoring didn't start straight away either, so the air monitoring, the quality, what was in that smoke, and the fact that, how long the duration of being exposed to that sort of 02.48PM 02.48PM

smoke should people be left to be in it, and so that they could make some judgments for themselves as to whether they should evacuate. If we're not evacuating, if we're not use the word "evacuate" and we have to relocate, then surely the general public should have been given that sort of information to make their own learned decision and to leave at an appropriate time, and not just for my people but for children in Morwell and all sorts of people that were exposed that had no idea. That's the sort of stuff I would have liked to have seen on there, let alone the fact that, I didn't even receive the warnings when the fire first started, and then a lady from Sydney who was doing a display with me on the next display got, "Leave now, fire imminent." And we're standing there and all three of us who were from the local area got nothing. 02.48PM 02.49PM 02.49PM

So, there's no co-ordination with the information that was given out and it was very ad hoc, a lot of it far too late, but education awareness stuff for people to make their own decisions. If the Government are not going to take a lead in it and say, you need to get out, then you need to give the people what they need to be able to make an informed decision as to what they should do. 02.49PM

MS RICHARDS: Thank you. I've had no indication of any questions. 02.49PM

DR WILSON: No questions, if the Board pleases.

MS RICHARDS: Thank you for your evidence, Ms Hamilton. May Ms Hamilton being excused.

CHAIRMAN: Indeed. Thank you very much. 02.50PM

<(THE WITNESS WITHDREW)

MS RICHARDS: The next witness is Professor Chris Brook. If Professor Brook could come forward please.

<CHRISTOPHER WILLIAM BROOK, sworn and examined:

MS RICHARDS: Good afternoon, Professor Brook. I'll start in the usual place and ask you for your full name and your address?---My full name is Christopher William Brook, and my professional address is 50 Lonsdale Street, Melbourne, Victoria. 02.51PM

You are employed by the Department of Health as the Chief Advisor on Innovation, Safety and Quality?---That's correct, that is my current title. 02.51PM

But you're here because you wear another hat during emergencies, which is the role of the State Health and Medical Commander, is that right?---That's correct, the State Health and Medical Commander. 02.51PM

You've made a statement to the Inquiry?---I have.

You have a copy of it there in front of you?---I do.

It may be easier, Professor Brook, if you use the version that's in the folder there provided for you because we'll be navigating through the same document. Are there any corrections you would like to make to that statement?---No. 02.51PM

Is it true and correct?---It is true and correct.

I tender that, if I could.

02.52PM

#EXHIBIT 44 - Statement of Professor Christopher Brook.

MS RICHARDS: The role that you currently hold, Chief Advisor, Innovation Safety and Quality is quite a new one?---Yes, it was created in April of this year and is a very different role that I have had held since around 02.52PM

1989.

It is a predominantly policy role; have I got that right?---That's correct. In fact, it's basically a solo operator role. It is literally a Chief Advisor on certain matters of transformation and innovation within the Department. 02.52PM

You report directly to the Secretary of the Department in that role?---I do.

Prior to that role and in fact for many years before that you have held a number of senior executive positions in the operational areas of the Department?---Yes, indeed, probably every single one except for the Director of Mental Health. 02.53PM

The most recent one before your current role was the Deputy Secretary of Wellbeing, Integrated Care and Ageing?---That is correct. 02.53PM

The other senior roles that you have held include a stint in the 1988-1990s, the Chief Medical Officer?---That's correct.

Is that the equivalent of Dr Lester's position?---No, it's not. The Chief Medical Officer is a policy role which some Departments around Australia have and others do not, and it's distinct from the Chief Health Officer, though to make it more confusing, in some jurisdictions they are one in the same. 02.53PM 02.54PM

So I'm excused for confusing the two?---Absolutely. The Chief Medical Officer is the person who understands the hospital and healthcare system and provides policy advice in relation to specific aspects of the hospital and healthcare system. The Chief Health Officer, by contrast, is a person who has studied in population 02.54PM

health and all of its aspects, whether it be epidemiology, promotion, prevention or environmental health or other things and views the world through the eyes of the health of the public broadly rather than the health of individuals or treatment services per se. 02.54PM

In addition to those various senior roles, you have also since 2008 been an adjunct professor at the School of Medicine at Deakin University?---Indeed.

And you Chair the advisory board?---I indeed do still after nine years. 02.55PM

You have had some association with Professor Catford through that role?---I've had an association with Professor Catford for far longer than. In fact, I was part of the panel who selected him to become Chief Health Officer and Director of Public Health in the Department after I left the role of Director of Public Health. 02.55PM

And in addition to all of that, there's also the role of State Health and Medical Commander which is what I'm going to be troubling you about today?---Thank you, yes. 02.55PM

You've given us an outline in paragraphs 10 and 11 of your statement of what the Department of Health does. It's not a frontline deliverer of health services, is it?---Absolutely not. It's important to say just a couple of things. The model that we adopt in Victoria for provision of health services is best described as a devolved management model; that is, we effectively commission or purchase health services from other organisations who are self-governed. So, whether it be our own hospitals, they are State statutory authorities, or whether it be Ambulance Victoria, 02.55PM 02.56PM

effectively the State Statutory Authority, or whether it be other organisations, be they non-Government such as many community health centres or through Local Government, we are the Commissioner and purchaser and monitor of services, but we occupy a very, very small place in the grand scheme of things. So the Department is actually a very small Department. The term that is in vogue these days is subsidiarity. 02.56PM

Sorry, that's not a word I've come across before; say that again?---Subsidiarity, it's a Jesuitical term. It's a term that implies that decision-making for local purposes is best made closest to where the decision is going to be delivered, so that's the nature of our devolved management model and it's something to which we have subscribed for basically forever with rare exception. So, it's not a command and control department; it is a framework department. We sometimes call it purchasing; we sometimes call it system manager, but really it's system planner and system funder. 02.56PM 02.57PM 02.57PM

So although the Health sector is a very large sector in Victoria and the health budget is a very large proportion of Government expenditure, the actual Department of Health is relatively small?---The Department of Health has approximately 1,300 people, which is well less than 1 per cent of the entire Health workforce around the State. I won't go into much detail about that because I think it makes the point of itself. The one exception to this is "the public health", so health protection and separately population health and health prevention, which is relatively 02.57PM 02.57PM

centralised in Victoria as compared with some other jurisdictions, and that's particularly true of health protection.

We have an organisational chart that we might bring up and show to you. This is the Department of Health's organisational chart from its website as at April 2014. We see your role is the dark blue box immediately to the left of the Secretary?---Correct. 02.58PM

Can you locate for us where the Chief Health Officer is on the diagram?---Yes, it's in "regulation", and it's right there. 02.58PM

Is that third column reporting through - I take it that's a Deputy Secretary position there?---The person in charge in the dark blue box?

Yes?---Is the Deputy Secretary of the regulation area. The Chief Health Officer is part of that regulation division, as is health protection as a function, which is in the same line somewhere; yes, just above the Chief Health Officer. 02.59PM

In that group we also find the Chief Psychiatrist, the Chief Mental Health Nurse and the Chief Nurse?---Yes, Chief Nurse and Midwifery Officer and the Chief Psychiatrist, correct. Yes, that's correct. 02.59PM

As you've said, it's a fairly small Department, about 1,300 people. What resources are available to you to discharge your office as advisor? Do you have staff that assists you?---I have an executive assistant who seconds as my office manager, and I have two colleagues who report indirectly through me to the Secretary; one is the Chief Advisor on Cancer and the other is the Chief Advisor on Transformation, and there is a very 02.59PM 03.00PM

small Transformation office. I'd have to say it is an arrangement which is different than I've had in the past, in that it is more of a collective than it is a line management role. I'm not sure that people want to go into that too far. 03.00PM

That's all right, I'm just trying to gauge the level of resources and I'll ask Dr Lester tomorrow about the resources available to her. In terms of communications assistance, where is that located within - assistance with communicating with the public, where is that team 03.01PM located within this structure?---We're talking the contemporary structure, so you would find communications in the corporate resources area, but you'd also find communications in certain specific areas. So for example, health protection which is a 03.01PM branch has an element of communication function, in fact one person; the Health and Human Services Emergency Management Group, which is a shared service actually run by the Department of Human Services but reporting and responding to both Departments, a vestige 03.01PM of our history of being one Department, that has a communications function. So, there is not one single communication function and they do serve different ends.

The other capability that I'm looking for in this 03.02PM organisational chart is environmental health expertise?---Yes, environmental health expertise is within the health protection branch, so it's a specific group within the health protection branch as it has been since time immemorial. 03.02PM

What is within the environmental health branch? How many

people?---It is at present, I understand, 8.9 EFT but that does not include the Senior Medical Advisor within the office of the Chief Health Officer. So, if you add those together you come up with approximately 10 EFT; that covers the gamut of environmental health. The resources within the Chief Health Officer's group are relatively new, that office was significantly beefed up a couple of years ago so that we had much stronger depth and the potential for succession planning, which has not always been the case in the past. 03.02PM 03.03PM

Could I include this organisational chart with Professor Brook's statement, please?---If I may, I need to point out that your questions relate to my current role, not to the resources that may have been available to me in the past. 03.03PM

#EXHIBIT 44 - (Addition) Department of Health's organisational chart as at April 2014.

MS RICHARDS: Perhaps for completeness I should ask you to point out significant variations because it is a very new role that you are in?---That's right. 03.03PM

So does this look like it looked on 9 February?---No, it looks nothing like it looked on 9 February. At that point in time I was the Deputy Secretary of Wellbeing, Integrated Care and Ageing. 03.03PM

Which is not a heading that I see on the new organisation chart?---No, you won't find it there. That was a very large division, the largest in the Department, approximately 450 people which included health protection and health prevention, but it also included aged care, Aboriginal health, human resources, and what 03.04PM

what was called integrated care so it was a wide-ranging portfolio. It was a big job, but it was an operational job essentially in terms of making sure that all those things happen. I don't think it makes much difference in fact to my role as State Health and Medical Commander. 03.04PM

And let's move to that. You've set out for us in part C of your statement an explanation of the role of the Department of Health in emergency management. We've all become fairly familiar with some of the concepts in emergency management, including command and control and coordination, to cut a long story short, the Department of Health will be the control agency for some kinds of emergencies?---More specifically, the Chief Health Officer will be the Incident Controller - that is, in charge of everything for specific forms of emergency management as detailed in the Emergency Management Manual Victoria, so they are human disease including epidemic, food, water and radiological and biological incidents, hazards, should they arise. It's restricted to those only. 03.04PM 03.05PM 03.05PM

An example of the work of the Chief Health Officer as Incident Controller in fact is indeed the very same Chief Health Officer but at the time acting, in relation to the Swine Flu or H1N1 Flu epidemic of 2009. 03.05PM

Yes, that was the example I was about to put you, but you beat me to it.

MEMBER PETERING: I just want a clarification in my own mind that the terminology is the same in the CFA structure of Incident Controller, but the two roles are not at all related?---Every declared emergency management 03.06PM

event of scale will have a controller and, depending on the circumstances, that may be at incident level, it may be at regional level or it may be Statewide. For public health emergencies of the type I have described, the Chief Health Officer is the Incident Controller. 03.06PM To all intents and purposes under the AIMS, the Australian Incident Management Scheme and/or the ICS, the Incident Control System, to all intents and purposes the functions are the same, but the agency function is different. For example the Fire Services 03.06PM Commissioner actually pretty much directly runs, pretty much directly, Fire Services. The Chief Health Officer, as Incident Controller for very specific purposes, is unlikely to actually run the health services or other responders or agencies who need to be 03.07PM drawn in.

MS RICHARDS: So it's an all hazards, all agencies model?---Absolutely.

And the identity of the Incident Controller and the agency from which they come will vary depending on the nature 03.07PM of the emergency?---They are pretty much prescribed in the Emergency Management Manual of Victoria and, as I'm sure you have heard plenty of evidence about under the new arrangements, in no small part resulting from the Royal Commission into the 2009 Bushfires, makes subtle 03.07PM changes to that so that the role of the Fire Services Commissioner becomes much more paramount than was the case before. But the point of ICS or the Australian inter-agency incident monitoring system is that the same structures - - - 03.08PM

We have to correct you there, Professor Brook, we were told

very clearly by Commander Katsikis that it's the Australasian Integrated Incident Management System?---Integrated? Beg your pardon, I apologise.

Sorry, I interrupted you. The role that the Department of Health takes more usually in an emergency is as a support agency?---Yes. 03.08PM

It's an unfortunate reality that with emergencies come health consequences and that is why there is a State Health Emergency Response Plan that sits alongside the State Emergency Response Plan?---Technically it sits beneath the State Emergency Response Plan which in turn is created only because of the Emergency Management Act and the Emergency Management Manual of Victoria. So, it's not legislated but it is subsidiary legislation. 03.08PM

You've provided a copy of the State Health Emergency Response Plan with your statement. Do I understand it correctly to be designed to ensure that the health response to an emergency meets the needs created by that emergency?---It focuses very much on health service needs, so that needs to be said from the outset, but, yes, it is entirely oriented to making sure that pre-hospital and hospital and other care that is required to relieve harm or to treat illness and/or harm and to prevent disability and death is put in place as needed. 03.09PM 03.09PM

So it's very much about assessing whether the pre-hospital and hospital services that are available are sufficient to meet the need and, if they're not, being able to bring more resources in?---Being able to recruit more resources within the existing system through scaling up of activity or downscaling of other activities and/or 03.10PM

bringing resources to bear at a local level if it is a local or geographically confined or spatially confined emergency management incident, which is often the case but by no means always.

You have provided us with very helpful diagrams. These diagrams are always easier to understand than a lot of text. If we could look at that, it's under paragraph 26 on page 5. The line of control is whatever the line of control will be for the control agency that is dealing with the incident; in this case we had a major fire so we have the Fire Services Commissioner sitting up the top?---That's correct. 03.10PM 03.10PM

Then if you could concentrate on the health side and explain how that works?---You will see that there's the State Health and Medical Commander, now that is myself or my Deputy and that's pretty much it. I am called a Commander, not a coordinator, even though the major function of the Department is co-ordination. I'm called a Commander because an important part of the role is in fact to be able to command resources as needed, essentially by direction. If that title is not there, it means that there's something, there's a gap, there's something missing in terms of the capacity to direct resources. 03.11PM 03.11PM

It's also called Commander because one of the agency who is a State owned or State health service, is Ambulance Victoria which runs on a command and control model. 03.11PM

There's two arms, we'll start with the command side, so the State Health Commander is a person appointed by the State Health and Medical Commander and 03.12PM

you'll see that runs down a cascade, State Health Commander, Regional Health Commander, Incident Health Commander and so on.

The State Health Commander and each person in his chain will nearly always be a senior Ambulance Victoria officer; that's because they are essentially the pre-hospital response capacity of the healthcare system, and they are us, so they're our arms and legs. 03.12PM

On the other side, the State Health Coordinator is the person who actually manages for us the function - function, not physical facility - called State Health Command and, through that, runs the same chain. So we have a State Health Coordinator, a Regional Health Coordinator and then we go back to Hospital Commander, because within a hospital, we're now dealing with a single agency so we're losing the multi-agency approach. So, should a hospital need to declare an emergency or have it declared to them, then the Hospital Commander is a particular position within that institution. Does that help you? 03.12PM 03.13PM 03.13PM

Just to explain the difference between the command stream and the co-ordination stream; what are the differences in the two functions ?---The State Health Coordinator is, if you like, the creation of the health command - what we call health command within the Department, but co-ordination. 03.13PM

Is that the person who goes and finds the resources that you need to match the unmet need?---Basically, that would be me. So I would direct the deployment of resources as a rule or whoever is delegating for me. But the State Health Coordinator is a person who runs a series 03.14PM

of functions which are designed to do the standard incident control system matters. So there's a planning, if you like intelligence function, there is an operations function of a sort, though the operations are devolved, therefore indirect, and there's a logistics function. Now, there may be different parts and there may be different cells created as is flexibly allowed in that arrangement, but they are the people who essentially ensure that the Department acts as a support agency no matter what risk, no matter what hazard, no matter what the size and scale of the event. 03.14PM 03.14PM

The command side tends to be direct response, usually pre-hospital and, as I've said, it's nearly always Ambulance Victoria senior officers.

Just to round that off and to be completely clear about the distinction between your role and the Chief Health Officer's role, you've already explained to us how the Chief Health Officer is an Incident Controller for certain kinds of emergencies. In other incidents where she's not in control of the incident, she provides advice and support to the Control Agency about public health consequences of the emergency. 03.15PM 03.15PM

MEMBER PETERING: Could you repeat the question, please, we got interrupted.

MS RICHARDS: The Chief Health Officer, when she's not being Incident Controller, for example a fire, has a role in providing advice and support to the control agency about the public health consequences of the emergency?---The Chief Health Officer is a statutory role which is created under the Health and Wellbeing Act of 2009. The Chief Health Officer is entirely 03.15PM 03.16PM

separate from the State Health and Medical Commander. Having said that, at the time of the Hazelwood Fire, for line purposes only I was her manager but not for professional or any other advisory purposes. The Chief Health Officer acts as a support, or part of the support system for any emergency event should it be needed for those public health issues that quite frequently arise, but the Chief Health Officer also operates somewhat independently in any event because the Chief Health Officer has both general and specific powers and is considered not just to be somebody who advises the Incident Controller but the most senior advisor to Government on matters of public health and is treated accordingly. 03.16PM 03.16PM

So advice and support, not only to the control agency, but to all of Government about public health consequence of an emergency?---Correct. 03.17PM

If I can, at the risk of oversimplifying things, summarise it like this: The Chief Health Officer's role in a non-health emergency involves public health advice, and your role as the State Health and Medical Commander involves the health response?---That's absolutely right. My role is to make sure that things get done, if I can put it as bluntly as that, and the role of the Chief Health Officer is to provide professional advice about the issues and the need for particular responses as may be perceived in certain circumstances. 03.17PM 03.17PM

That brings us eventually to the Hazelwood Mine Fire. You deal with this in section G of your statement, or starting in section G of your statement. You tell us at paragraph 44 that you were advised on 9 February 03.18PM

that there was a fire in the mine. Do you recall how and when you first became aware of that?---Yes. On Sunday, 9 February I had a conversation with the State Health Coordinator who happened to be the Deputy Health and Medical Commander, it was a telephone conversation 03.18PM in which we discussed what was happening, and it was known only at that point in time that there had been some spotting, no-one was quite sure from what bushfire, but there'd been some spotting in the Hazelwood Mine and that's as much as I really knew as 03.18PM of 9 February. The situation evolved from that time forward.

It's important to emphasise that there were a tremendous number of fires active in the State on 9 February, including very large fires at Mickleham and 03.19PM in East Gippsland, and so there was a lot of smoke in the atmosphere, there was a lot of active fires and a tremendous amount of activity occurring. As a result of that notification, a State Health Incident Management Team was established and it met the first 03.19PM time the following day.

On the Monday?---On the Monday.

I understand from paragraphs 44-46 of your statement that your focus on the Hazelwood Mine Fire really sharpened on Saturday, 15 February. Have I understood that 03.19PM correctly?---The weekend of 15 and 16 February was when really the fire became something quite dramatically different, consistent with the evidence I think you've previously heard, but the reality is that, due to prevailing weather conditions and the luck or not of 03.20PM the firefighting effort, that fire had grown by that

weekend to be a completely different event. So we actually had a period of time during the first week when it was predominantly bushfires and with some activity in the mine, with no clear idea of what that might mean. 03.20PM

Professor Brook, I think there's a difference of view between those who were in Morwell and those who were in Melbourne about how smoky it was here?---Yes.

From your point of view, you became aware on 15 February that the fire was very serious and that the conditions in Morwell were extremely smoky, is that fair to say?---15th and 16th. 03.20PM

15th and 16th, that weekend, and that informed actions that you took in the following week?---Yes.

You've told us that there was a State Health Incident Management Team formed on the 10th and a Regional Health Incident Management Team was formed the follow Monday, the 17th?---The 17th, correct. 03.21PM

What does a Regional Health Incident Management Team do?---The Regional Health Incident Management Team also brings together the relevant parties at a regional level. Perhaps what's important in terms of the Regional Health Incident Management Team is, it brings together local health services, as well as other key contributors at a regional level who will form part of the response and eventually relief and recovery. 03.21PM

Within that Regional Health Incident Management Team was not just the regional office but also Latrobe Regional Hospital, Latrobe City Council, Latrobe Community Health Service and the Medicare Local - theoretically, the organising body for general 03.21PM

practice, so they were at least in that space and that group met virtually daily.

Was Ambulance Victoria involved in that group?---I should have mentioned Ambulance Victoria, yes, they are involved in that group as well. 03.22PM

Obviously a fundamental part of your role as the State Health and Health and Medical Commander is to assess whether available medical services or health services are meeting the need. How did you set about doing that in that week starting 17 February?---I think that's 03.22PM listed in my statement, and I don't know that it's necessary to go through it paragraph by paragraph. What we formalised as quickly as we could during that week were arrangements which had to that point in time been substantially by discussion. So we received 03.22PM progressively daily information about what was happening in Ambulance Victoria, call-outs particularly for priority cases and particularly priority respiratory cases; what was happening in presentations to the emergency department of Latrobe Regional 03.23PM Hospital, what was happening at nurse on-call. We did that because we'd actually prioritised nurse on-call as a place for the community to call.

Yes, we see that in the advisories that we - - -?---And also in information which we put in place, specific 03.23PM mechanisms to obtain about what was happening with local general practice. We don't control, fund or manage general practice, so we needed to put in place specific mechanisms. Indeed, many of these things needed to be quite specific mechanisms because 03.23PM administrative information does not arrive in an

instantaneous fashion so that we had to put in place collection instruments for all of these things.

From the 16th you had an information flow from Ambulance Victoria about their call-outs and in particular call-outs that were related to shortness of breath or to chest pain?---Yes. 03.24PM

From the following day you had a daily report from nurse on-call?---Yes.

On 19 February there were medical officers in the Health Protection Branch who were contacting general practitioners directly?---Yes. 03.24PM

There was also as I understand it some contact made through the Medicare Local?---Yes. So, the first approach was to directly contact each of the 19 identified general practices to try and ascertain where they were at. It was important to make contact with them directly; thereafter we set in place regular reporting from the Medicare Local because that is the natural organising body or organising function. Ideally we would work through in all circumstances, but this is the first time we've actually had an incident of this sort since the creation of Medicare Locals. It'll be interesting to see what happens now that they're all about to change again. 03.24PM 03.24PM

Were there also enquiries made of Latrobe Regional Hospital?---Sorry, did I not mention that? 03.25PM

You certainly do in the assessment report which I'm going to take you to shortly?---Yes, I think from the 15th, I think it's right to say from the 15th the regional office received daily reports from Latrobe Regional Hospital and that was passed on. 03.25PM

Were there enquiries made of the Latrobe Community Health Service?---They sat on the Regional Health Incident Management Team, but we didn't make specific enquiries of them in relation to presentations, simply because they're a diverse provider of a whole range of services across both health, human services and indeed other functions, and they are not a primary clinical care provider, but they had every opportunity to give input through what's called the RHIMT, if you like, the Regional Health Incident Management Team. 03.25PM 03.26PM

So from those various sources of data there's been an assessment prepared which is Attachment 4 to your statement?---That's correct.

It's entitled, "Assessment of short-term health impacts in Morwell and the Latrobe Valley." Perhaps it would be more accurately entitled, "Assessment of demands on health services in the Latrobe Valley"?---Yes. 03.26PM

Obviously there's a correlation between the two, but one does not equal the other, does it?---Yes. Almost by definition the State Health Emergency Response Plan focuses on health services and focuses on immediate impact. 03.27PM

Yes, that's what it's for?---To the physical health. There's a whole separate discussion about well-being and one in which I know the panel has interest. This, at risk of straying, takes us into the distinction between response and relief and recovery. Suffice to say we're involved in both, but this is indeed, as you correctly say, measurement of health service response and its adequacy or otherwise because of this mine fire. 03.27PM 03.27PM

This document is a very useful assessment of the demands that were being made on the health services that were polled, if you like, during February and March 2014, but you wouldn't claim that it represents a comprehensive assessment of short-term health impacts from the fire?---I think that it does to the extent that it measures the requirement for people to access health services. 03.28PM

Yes?---There are other aspects of health that we can take as broadly as we like, which I'm happy to discuss, that it doesn't capture. But, as I say, it's important to try and determine what of those belongs under the heading of "response" and what of those belongs under the heading of "relief and recovery", with which we are intimately involved, what is short and what is long-term. 03.28PM

I think my question was, you wouldn't claim that this document represents a comprehensive, and that's the word I emphasise, assessment of the short-term health impacts of the Hazelwood Mine Fire?---I can only repeat that it does represent a comprehensive assessment of the demands placed on health services, the needs of the community, as measured through that route; that is what it measures. 03.28PM

Perhaps you can take us through that and tell us what your researches indicated about the demands on health services?---Yes. What the summary of that report says is that there in it fact was no statistical increase in presentations to the Latrobe Regional Hospital emergency department, of course a major regional hospital just down the road. That's not to say that 03.29PM

that emergency department was not busy at times, emergency departments often are, but not because of presentations associated with the Morwell Mine Fire.

There was no statistical increase in ambulance call-outs for respiratory disease, chest pain particularly. There was some increase in calls to nurse on-call, but one would hardly be surprised at that because that was where we had promoted as first port of call for the community, and there was again, we thought entirely predictably, an increase in demand on general practices with exacerbation of respiratory symptoms most particularly, but irritation, headaches, sore eyes, sore nose, blood noses, that sort of thing, more importantly asthma - again, things that we would have entirely predicted. 03.29PM 03.30PM 03.30PM

Fortunately that was within the capacity of those general practices who still reported to us that they were able to see patients on an urgent as needs basis.

So that was probably the largest area of increased demand for services that this assessment identified from general practitioners?---Yes, I think definitely. 03.30PM

The picture that emerges is that general practitioners were stretched, they were very busy, but they were able to meet the demand for their services?---Yes, I think it was a variable pattern. There were different reportings from different general practitioners; again, that is actually pretty normal in general practice. 03.31PM

Can I just ask you about the information that was collected from general practitioners. There's a heading on page 20 of the document, "Data Sources, Time Periods Covered By Data Sources." In the last sentence it 03.31PM

says, "GP clinic activity was collected between 19 February to 4 April and is reported for the period 28 February to 4 April." Why is the activity that was collected for the period 19-27 February not included in this assessment?---I believe that's because there wasn't an instrument. So the first reporting was by telephone contact, it was qualitative information, it took a couple of days to conclude, and I believe that effort was being put in to try to make sure that there was an instrument that allowed for epidemiological comparative information to be collected, which is absolutely not the case normally for general practice. I believe that to be the case, but I'm happy to take that further and provide further information should you wish. 03.31PM 03.32PM 03.32PM

I'd be grateful if you could clarify the reason for that gap?---Yes.

Because one would have expected, given what we've been told over the last couple of days about peak periods of smoke, for there to have been some quite significant activity in the week following 15 and 16 February, and also around 21 and 22 February?---The first contact - again, I have to say that in the first few days it was anecdotal information only; didn't suggest that, but of course it did suggest that there'd been an increase in activity which we fully expected. 03.32PM 03.33PM

One other clarification about the sources of data that went into this assessment. The Latrobe Regional Hospital data was only emergency department presentations; is that correct?---Yes. 03.33PM

So, it didn't pick up outpatient consultations for existing

patients?---No, it didn't, and this relates to a range of issues about the difficulty or otherwise of collating that kind of information, even in a system that's based on activity-based funding. More fundamentally, you know, I could observe that it didn't contain inpatient admission information, but the two correlate, so presentations to emergency departments and subsequent urgent inpatient admissions do correlate. Unfortunately it takes approximately two months to get that information from routine back to capture sources. 03.33PM 03.34PM

The other part of the picture that may be missing is specialist consultations. For example we just heard from Ms Hamilton that people with diagnosed asbestos diseases, you would expect them to have a relationship with a respiratory physician, would you not?---We did talk, and you may wish to ask the Chief Health Officer when you take her to the witness stand about the local respiratory physician at Latrobe Regional Hospital. We certainly communicated with the local respiratory physician who was quite supportive of what we were saying and what was going on, so this is, I have to admit, purely anecdotal. We don't have a mechanism particularly of capturing private specialist information. 03.34PM 03.34PM 03.34PM

MEMBER CATFORD: I wonder if I could ask Professor Brook, thank you very much for your very full statement, but just in terms of general practice clinic activity, I'm just trying to understand, was this essentially qualitative information or was there quantitative information, because I don't think we have any counts 03.35PM

of any attendances. Certainly, the detail towards the end of the document on page 22-23 seems to suggest it's really qualitative, it's sort of measuring experiences or increases. So, I'm just interested to know whether there are any hard numbers behind that figure 4 which has some sort of categories of attendance without any sort of underlying details of what, for instance, increased activity means compared to stained activity?---My understanding is that we do not have hard numbers. In terms of, we tried to make it as simple as possible for the general practitioners involved to provide information to us so that there were categories only, as I understand it. It does, however, demonstrate one of the great failings of the Australian healthcare system, which is that we do not collect routine information on why people go to the general practice or for that matter private specialists. Our system just simply doesn't do it, it records transactions only. Sorry, that was gratuitous.

03.35PM

03.36PM

03.36PM

MS RICHARDS: Which leads very nicely into the next question I was going to ask you, which is that there were clearly a number of short-term health effects experienced by people living in Morwell and more broadly in the Latrobe Valley, sore eyes, blood noses, coughs, nausea, that wouldn't necessarily prompt them to seek medical attention?---They may or may not, and there is absolutely no question about all of that being absolutely true. Our predominant concern was that people with existing chronic conditions, especially respiratory and cardiac conditions, would deteriorate. The short-term effects of exposure to smoke,

03.36PM

03.37PM

particularly particulate matter are extremely well recognised, as indeed is long-term exposure; the difference between the two being whether it's days to weeks or years or more, and if we talk about that more in relation to the long-term health study, if you would prefer we could discuss that distinction then. 03.37PM

No, my question was a much simpler one, it is really just to make it clear that not all the short-term health effects are captured in this study because not all the short-term health effects led people to engage in the transactions that you just identify?---I fully accept that. 03.38PM

MEMBER CATFORD: Have you ever thought about contacting pharmacists? Because of course many people will go to see their pharmacist often before they see their GP. Was there any indication of increased attendances or purchasing patterns or anything like that?---Professor Catford, the answer to that is, no, we did not approach pharmacists. It's an interesting question, we have in the past contemplated how we make best use of the pharmacists' services, for example in the H1N1 influenza pandemic, but we didn't in this instance. We were trying to focus on the things that were specifically relevant to SHERP and the role of the State as Health Commander/Health Coordinator. 03.38PM 03.39PM

MS RICHARDS: So the purpose of this entire exercise we've just been through was for you to gain an understanding of whether the available health services were adequate to meet the demand and your conclusion was that they were?---For the purposes of pre-hospital and hospital care and the requirements of the SHERP, yes, but we 03.39PM

didn't actually finish there.

Notwithstanding that assessment and the reassuring conclusion that you were able to draw from it, you did take steps in that week to set up the community Health Assessment Centre. Can you tell the Board why it was that you identified that as a necessary step?---The fact that health services, as I have defined them, were able or adequate to cope with the specific health service demands of the community did not, as you have identified, allay the concerns, anxieties and fears of the community. Very much through the course of that week those concerns were growing, and we felt that, as part of, if you like, a communication but also a reassurance strategy, we needed to do more. 03.39PM 03.40PM

For that reason on 19 February, after some broad discussion, we established what became known as the Community Health Assessment Centre. We did so very conscious of what we were trying to do, which was not to replace primary care, not to replace general practitioners, not to replace Latrobe Regional Hospital and its emergency department, nor load onto it new activities that an emergency department doesn't need, but to provide a capacity for anybody in the community to attend, free of charge, a centre that would provide basic health assessment, that would provide as it turns out measurement of carboxyhaemoglobin, that is, the impact of carbon monoxide in the blood, and to provide both information and reassurance through personal interaction. That centre which was set up in the Morwell East shopping centre - - - 03.40PM 03.40PM 03.41PM 03.41PM

Co-located with the Ambulance Victoria branch?---It was

co-located with the old rural Ambulance Victoria regional headquarters which was a physical space available to us. The reason that the Morwell East or Mid Valley Shopping Centre was chosen was multi-fold; it is something of a hub, it is a place that has ample car parking, it does have bus transport, and we had the physical facility to be able to establish this entity which was not readily available anywhere else. It's a clinical entity, it needed the capacity to have privacy and confidentiality to the persons attending. That was managed and staffed by Ambulance Victoria paramedics in conjunction with nurses derived from the Latrobe Regional Hospital, the Community Health Centre and other places. 03.41PM 03.42PM

It ran from 21 February. It did take us a short period of time to establish, primarily because we had to actually bring material from Melbourne to equip it and to ensure we had adequate rosters; it ran from 8 a.m. to 8 p.m. from 21 February until 30 March when, at the end, we closed it at a time after demand for it had really reduced almost to nothing. 03.42PM 03.42PM

There was a very short period between the decision to establish the centre and it opening its doors. How did you go about communicating the existence of the centre and its availability to people living in and around Morwell?---It was public media and it was - my recollection is that the local press was engaged but also some public media and there is a communications exercise in its own right. The interesting thing really is that, for the first couple of days, it had relatively low attendances, but I think, as happens a 03.43PM 03.43PM

lot in events of this sort, word-of-mouth meant that by around about the third day attendances had soared and remained very high. In the end 2,072 people were assessed at that site, which is if you like to think of it, a fairly significant part of Morwell's population. 03.44PM

Yes, and that's over approximately a five week period?---With most of the presentations occurring relatively early on.

Although you'd not identified any particular unmet need in the health services available, clearly there was a need that this Community Health Assessment Centre did meet?---As I've said, we saw this as a really important initiative to try and assist the community for two purposes: Provision of information and reassurance, but also to provide basic healthcare assessment. It was quite novel, we'd never attempted anything like this before, and it was well received in my view by the community. You could put this into a number of different categories; one is primary health benefit and the other is communication. 03.44PM 03.45PM

And community engagement?---Very much community engagement, no question about that.

I'll come back to that, but before I do explore that question of community engagement I'd like to ask you some questions about the area of aged care?---Yes. 03.45PM

There are a number of aged care facilities in Morwell. We had some evidence yesterday about schools and early childhood centres, but of course another vulnerable group are older people. The formal advice from the Chief Health Officer identified older people as people 65 and over. Am I right in assuming that as that age 03.45PM

increases, so does the vulnerability to smoke as a general proposition?---There's obviously a general relationship between age and vulnerability, but vulnerability is usually classified according to a person's state of health rather than necessarily their biological age. But of course there is a general relationship between age and health. 03.46PM

People who receive aged care services on the other hand, whether they be home and community care services, which we fund predominantly through Local Government, or whether they are recipients of community care packages, which are Commonwealth funded but it's essentially the same provider, or whether they're in residential aged care, which is actually a Commonwealth function but there are some public sector residential aged care facilities, are all vulnerable in different ways and different approaches were taken throughout this to approach each of those different groups. 03.46PM

To begin with I'd like to identify the aged care residential facilities that exist in Morwell. I've been able to identify three, but you will probably have more complete knowledge than mine. There is St Hilary's that's run by Baptcare which is located in Elgin Street in the southern part of Morwell?---Yes. 03.47PM

So Elgin Street runs between Maryvale Crescent and Hazelwood Road?---Yes. 03.47PM

So that was obviously in an area quite close to the mine. That's a 51 person facility and 40 of the beds are high care beds? Does that sound right?---Yes.

There are two other residential aged care facilities I've identified, one is the Heritage Manor Aged Care which 03.47PM

is in Maryvale Road on the northern side of town, and Mitchell House which is in Vary Street?---Yes.

Heritage Manor is the largest, it has nearly 100 beds, approximately a third of those high care, and Mitchell House is a hostel and it has about 56 low care beds. 03.48PM

Are there other facilities in Morwell residential aged care facilities?---I'm sorry, I'm unable to answer that question; I just do not have that information with me.

You mentioned a little while ago that that was an issue that you were managing along with others. How did you go about ensuring that these collections of people in a vulnerable group were receiving the advice and assistance that they needed?---We communicated with them directly - that is, the aged care branch of the Department communicated with all residential aged care providers and with the Commonwealth, who is their primary funder, regulator, licenser and inspector and accreditor and whatever; whether they're public or not-for-profit or private sector organisations. So all residential aged care facilities were contacted on or about 21 February. Particular focus was made predominantly through the region on St Hilary's because it was in the area considered to be at highest risk. Eventually Baptcare decided that, on our advice, but it is its own decision, it decided to relocate and did so very successfully to other facilities within its broad purview, rather than having to have alternative facilities found for its residents. 03.48PM 03.49PM 03.49PM 03.49PM

Was that relocation undertaken after the Chief Health Officer's advice on 28 February or before?---It actually relocated after. There had been quite a lot 03.50PM

of conversation with St Hilary's about what were its wishes in relation to relocation. To that point in time it had decided to stay in place; it did not want to relocate is my distinct recollection.

Were you engaged directly in these discussions or was this advice that's been provided to you?---No, that was through the aged care branch and the region, as you might expect. 03.50PM

There are also a number of older people living at home who access home and community care services?---Correct. 03.50PM

How was information provided to those people and to the home and community care service providers who visit them in their homes?---There are several home and community care providers in the Morwell area; the most important of which is Latrobe City Council. Our HACC team within the aged care branch directly liaised with those providers and particularly Local Government. What the end result of all that was, was that they were offered resource - and I can't detail that - but they were offered resource to ensure that all clients who required additional help were given additional help, and that they all had what are called welfare checks; that is, at the time of visit or at the time of contact how they were going was determined. 03.51PM 03.51PM

That does pick up a lot of what I call vulnerability people in the community; doesn't necessarily pick up everyone, because somebody who was vulnerable for one reason might not be vulnerable for another set of reasons and so it goes on, but it is a pretty good substitute for people in the group of elderly, dependent and potentially chronically ill 03.51PM 03.52PM

about whom we care. That's separate from the door knocking which Latrobe City Council primarily conducted, though it did so in conjunction with Red Cross and others in the particular area of Morwell that is called the southern part of Morwell, I think is the only term I would use to describe it anyway. 03.52PM

After the advice was provided by the Chief Health Officer that people in vulnerable groups should consider temporarily relocating, are you able to say what steps were taken to those receiving home and community care to assist them to relocate if they wished?---I think that fits into the general category of extended services and welfare checks. These things occurred more or less concurrently. The reason - I don't wish to distract the Inquiry at all, but the reason we do not use the term "evacuation" is that the Department of Health actually has no power to evacuate people; the Chief Health Officer cannot evacuate people. Evacuation is a very special term that is used only under very specific circumstances and needs to in fact be a matter for the Minister for Police and Emergency Services and his colleague Ministers. 03.53PM 03.53PM 03.53PM

We can recommend relocation, and we did, it's an advisory only, and we worked hand-in-hand with our colleagues in the Department of Human Services to ensure that, from the moment that advice is given, there are financial opportunities for people to take up; that's not respite grants, they came earlier, but relocation packages, so it's really important to understand these things have to happen concurrently. It's no good recommending people relocate if they 03.54PM 03.54PM

haven't got the financial capacity to do so. Questions about the adequacy or otherwise of that I can't address but these things happened concurrently. By no means everybody chose to relocate.

If I can ask you to pause there. Is your evidence that the health advice that was being provided, and this may be a matter that's better explored with Dr Lester, was contingent on there being an assistance package available?---I think the other way round; I think that, if my - not if. On 27 February a meeting late in the day of the State Crisis and Resilience Council addressed the issue of the decision that Dr Lester had come to about relocation of the most vulnerable in the community to be applied the following day. At that point in time it became necessary for DHS to very quickly identify how it was going to provide relocation grants and to whom, and in effect it's the other way round. So in fact that was more or less how it happened. 03.54PM 03.55PM 03.55PM

It's not a unique decision of the Department of Health; it's a decision of the whole of Government or those people represented at the State Crisis and Resilience Council Meeting, which is most of Government, and that was then further consulted the following day when I was actually here on the 28th, the day of the announcement, with Local Government in - actually across the road in the Department of Justice building. 03.55PM 03.56PM

Just to be clear, the distinction that you draw between evacuation and relocation is that evacuation is compulsory?---That's correct. I think my reason for 03.56PM

not wanting to use the term "evacuation" is because it implies compulsion, and we actually have not got any legal basis to compel people to leave their homes, their businesses or anything of the sort. There are very limited specific powers under the Public Health and Wellbeing Act which allow for things like the absolutely reverse of that, the compulsory detention of people within a place. 03.56PM

Quarantine of people, yes, we don't need to go there?---Well, quite the reverse, so they're a very different set of powers. 03.57PM

But in fact the case is, Professor Brook, that there's no power in Victoria to compulsorily evacuate someone from their home if they don't want to go?---Well, that's right. 03.57PM

So it's a bit of a distinction without a difference, is it not?---Yes, I can accept that. I can accept the argument; my point is that, we always try to do everything on the basis of best possible advice, what is good for you, the basis of why you may choose to do this. I just simply put that. 03.57PM

But it's the compulsory connotation, if you like, that leads you and those who work with you in the Department of Health to avoid the word "evacuation"?---It's a source of discomfort, that, you know, running around compelling people without specific powers is something that people who are working - people work in the Department of Health because they care. People work in the healthcare system because they care, not for other reasons, so it is that connotation. 03.57PM 03.58PM

Moving to communications and community engagement, I said

I'd get there eventually. You've set out in paragraphs 70 and onwards in your statement the various steps that were taken by the Department of Health to communicate with the community and engage with it. I'd like to take you back a step to a theoretical level. 03.58PM There was a White Paper published by the Victorian Government at the end of 2012. I'm sure you're familiar with it, the Victorian Emergency Management Reform White Paper, and it starts with a discussion of the importance of community in emergency 03.59PM management?---Yes.

The first chapter is headed "Community". There is discussion on the first page of the fact that the conventional top-down approach to emergency management is changing. Can you read that, Professor Brook, or 03.59PM would you prefer to have it provided?---No, I can read it on the screen.

If we can stroll down a couple of paragraphs to the paragraph that starts on page 4, chapter 1, "Community". There's a paragraph there that really 03.59PM encapsulates, "The conventional top-down approach to emergency management is changing. Governments in Australia and around the world now recognise the importance of local involvement in emergency management, particularly in planning and mitigation." 04.00PM Then in the following column under the heading, "Engaging the community", there is discussion of the way in which community resilience can be established, "by ensuring that people in the community are fully engaged." 04.00PM

Commissioner Lapsley spoke in his evidence about

the importance of engaging with the community before an emergency happens so that emergency responders and those supporting them know the trusted networks in the community and have ready access to them. Now, is that all philosophy that you are familiar with and 04.00PM
adopt?---Well, not only adopt but absolutely adopt. If you allow, I'll just put that in a level of context.

The thing called "communication" in my view, it is my view, has at least two levels. One level that applies in all emergency management situations is the 04.01PM
transmission of fact. That fact is necessarily based on content-rich information which usually comes from one departmental source or another. It is usually presented through mass media and in conventional manners, and I think as has been clearly enunciated 04.01PM
again and again by this community, that approach even to fact didn't effectively reach all members of the community.

So, can I distinguish just that from the question of community engagement, because I think community 04.01PM
engagement, again in my view, is the mechanism by which, whether it's fact or simply information, is able to be made readily available to members of the community in an engaging way and that the can actually help them understand, if there is a lack of 04.02PM
understanding, or simply offer information if there is a lack of information, or to deal with conflicting information. Heaven only knows in most emergency management situations there is a sea of information, often conflicting. 04.02PM

Community engagement I consider to be a very

different thing than the presentation of fact. I also consider it the area where the greatest potential exists - and I think I say this more or less in my statement - for betterment of how we approach community information or communication into the future. So, from the top there's didactic directive information that is not going to work in most communities. 04.02PM

I do take the view that every community is different. I do take the view that communities are not defined by any means solely by the demographics, just as you may have said that not all health issues are captured by health service utilisation. There are many different characteristics in different communities and we see different characteristics quite frequently in emergency management. 04.03PM

The only way that I believe you can engage properly with the community is at the local level. For that to occur effectively there needs to be a totally joined up approach at the local level, so in other words, all agencies need to be engaged at the local level, and I think that's done relatively well in some instances but not always. I think that the terms that are used in the resilience statement and the terms that are most widely used identifying networks - that's networks that exist, it's not artificial networks, it's not the creation of different networks, it's networks that exist and identifying trusted leaders is a critically important task. 04.03PM 04.03PM

So that's the theory. How is that being translated by the Department of Health in its emergency management practice? How does that actually happen on the ground 04.04PM

in the Latrobe Valley?---I think that both my statement and the statement of the Chief Health Officer give an indication of the sorts of, if you like, activities that were undertaken and, as I say, I think that you will see that they largely followed the two different paths that I am talking about. 04.04PM

There was a lot of engagement or a lot of attempted engagement at the regional level and that involved multiple parties; whether it involved the right parties or not is a question for further discussion and, may I suggest, quite possibly further research. 04.04PM

One of the questions which I cannot answer is, if you want to have a regularised source of information about local networks and who are the local trusted leaders, where is that information sourced from? Because it isn't clearly something about the Department of Health, certainly this is far broader than the Department of Health, so where would you look to have that information gathered, and in the spirit of community resilience, which is the ideal that the world pursues, there needs to be a local capacity to identify and provide that information no matter what the circumstances are. 04.05PM

We've had evidence from several community witnesses and it's consistent with the messages that were delivered during the community consultations, that the CFA did community engagement very well, which may be a function of the fact that it's a volunteer organisation, with members living in the community. Other departments, including the Department of Health, were not marked as 04.05PM 04.06PM

favourably. Have you reflected on why that is the case and where there is room for improvement?---I think there's a number of statements to make, so I'll make them.

That's why you're here?---The first is that, as I mentioned earlier, the Department of Health is actually a small entity that sits in the City of Melbourne and through regional offices. When people look to trusted sources of information, they don't necessarily reflect on the fact that Ambulance Victoria is the Department of Health. The Latrobe Regional Hospital is the Department of Health. The Latrobe Community Health Centre is the Department of Health. The Local Government through its tax service providers are the Department of Health. 04.06PM 04.06PM 04.07PM

That's not what you told us at the start of your evidence, Professor Brook?---No, I said they're our workforce, so let me be clear that they are our arms and legs. So you get quite interesting differences of view. We've seen this before and we will continue to see it, and so it is important for us to reflect on that and ourselves start making clear - well, you know, we have tried to do this, we have tried all forms of communication and this has been tried across the whole of Government, it's not just the Department of Health. 04.07PM 04.07PM

It's important to get messages out there from the outset and I think this can only occur locally, that these are our trusted sources of information. I also think that, because the Department of Health is often personified in this instance in the form of the Chief Health Officer, that they see that as the only 04.07PM

expression or engagement of the Department of Health.

So that takes me to my second point: The Chief Health Officer has an absolute requirement to be in excess of 99 per cent correct in everything she says. There is no tolerance for bad information or for 04.08PM unfactual information or for lack of evidence when the Chief Health Officer makes statements; that is factual. So, industries can suffer, communities can suffer if that information is wrong. Others have more flexibility and more opportunity to say, oh no, I was a 04.08PM bit wrong, if you like, or whatever, that's just a - but the Chief Health Officer actually has to provide crisp factual information and not stray beyond it.

So there is a perception about the nature of the Chief Health Officer at times, which I don't support, 04.08PM which is that they don't understand or that they're simply trying to say things that is unacceptable for a particular community. I would hope always that the Chief Health Officer is seen as the most senior source of advice, professional advice, to Government and the 04.09PM community and that their advice can and should be trusted intuitively. If that's not the case, then obviously that needs to be addressed. However, in this instance it's hard to know how many different ways we might have tried; we certainly tried every known 04.09PM communication method - I mean across Government, I don't just mean the Department.

You strayed a fair way from the question I put to you, which was, we started this discussion with a discussion of the philosophy about the importance of engaging the 04.09PM community and identifying trusted networks in advance

of an emergency?---Yes.

I asked you how that theory had translated into the Department of Health's practice here in the Latrobe Valley. Had that exercise been undertaken in the Latrobe Valley before the fire started?---The reality is that none of us can ever know where the next emergency management event will be or indeed what it will be. I think it's very honest of me to say that, remembering that I take the view that this is actually across the whole of Government, this is not department-specific. The new emergency management arrangements are barely in place. The discussion about local resilience and how to identify networks and communities of interest is about in the same place as the discussion about vulnerable people was in 2009; it is at the beginning. So, who identifies - my earlier question is very important - who is it that is charged with identification in the new emergency management arrangements of local networks and trusted local leaders? 04.10PM 04.10PM 04.10PM 04.11PM

So the answer to my question is, no, that work hadn't started in the Department of Health prior to the fire. The fire, I suggest, has been a learning experience for the Department of Health and you must now have a better idea of where those trusted networks are. What's your assessment of where they may be?---I'll answer that question by saying that I've never engaged in an emergency management event where there haven't been important learnings, and I've engaged in a lot of them. If we stopped learning from emergency management events then we really have lost opportunities at the very 04.11PM 04.11PM

least. This is not different from others, and yes, clearly this is a critical question for what happens next in relation, not just to Morwell, but to any community who might face a major emergency event; there could be flooding next time round, more likely fire, 04.12PM but you are right, this is at its beginning.

Yes, so we're all here to extract what learnings we can from what happened in February and March. In relation to community engagement, the situation is that, despite all the things that you list, the community witnesses 04.12PM we've heard from and the outcome of community consultations was that the Department of Health's message was not well received. Leaving aside the Community Health and Assessment Centre which was a great success and a very welcomed measure, what have 04.12PM you learned? What would you do differently in the Latrobe Valley in the future?---Well, I hope it doesn't happen again, but that's just a hope. I think that the whole of Government - I repeat, community engagement cannot be about the Department of Health. If it's seen 04.13PM as the Department of Health, we've again missed a really important lesson. It actually has to be the whole of Government, it has to be totally joined up and it has to work at the very least much more strongly with Local Government. 04.13PM

I don't want to be putting further burdens on Local Government, I understand how unpopular that is, but if ever there was a place in the local community who should have knowledge of local networks and leaders, it is Local Government. I think that we 04.13PM should be providing communications/expertise, into

events of this sort rather than seeing communications/expertise as existing separately and over and above or different from the local resources.

I do not contemplate myself as an expert in communication theory, but I suspect that what I say does resonate with others. 04.13PM

So, stronger connection with Local Government?---Stronger local organisation, much stronger local effort at community engagement, all Departments; whether it be Emergency Service organisations - - - 04.14PM

I'm asking you about the Health Department and what the Health Department is going to do differently in future. One trusted network that you've not identified are the general practitioners in the Latrobe Valley; that seems to be an obvious starting point for both receiving information about the demands on their services but also providing information to the community?---Indeed, I think I've said that we have made very distinct efforts. We both communicate with and request information from, it's not a one-way street, so we always provide information to general practitioners and I think you'll find that in the witness statement of the Chief Health Officer the steps that we took to work through Medicare Locals, the College of General Practitioners and others, and as far as is possible whenever directly to make sure that general practitioners had information available to give to members of the public. Sometimes I think you are quite correct in saying that can be a very powerful communication instrument. 04.14PM 04.15PM 04.15PM

There's just one other area I'd like to ask you about. You

talk in paragraph 78 of your statement about the fact that the communication of health information to the community always presents a challenge in an emergency situation?---Yes.

But really, that is a fundamental part of the Department of Health's role, is it not, to be able to do that?---At risk of boring you with repetition, I have stratified that thing called communication into DH-specific activities, which actually are about the transmission of factual information in a manner that largely involves mass media, press conferences, press releases, fact sheets and other communications. You might call that traditional but that is the practice in Victoria, nationally and around the world in order to transmit factual information. 04.15PM 04.16PM 04.16PM

I distinguish that entirely, that is DH's strict public health role, I distinguish that entirely from the concept of community engagement, which in the end, I repeat, has got to be all Government and it really has to be local, it really has to be tailored to each community, but I'm not sure I can give you a prescription as to how to make that happen. It's that that will engage and ensure that messages get through, the facts are understood and that a context and, hopefully, reassurance is provided. 04.16PM 04.16PM

You remark on the need to convey complex medical and scientific information. Was the health message in this instance that complex?---It was complex in the sense that it was disbelieved. I have heard many statements made by community members, this came out of community consultations and I think it's come out of witness 04.17PM

statements, that said, you know, there was conflicting information or we didn't trust the information or - now, that makes communication of factual information very, very difficult indeed.

In that context the message that was transmitted from the outset was, smoke is harmful for particular groups in the community in particular, and smoke of any sort - and remembering my concept of how this fire actually evolved and changed - smoke puts older people, people with cardiac respiratory disease particularly, pregnant women, young children, people with chronic disease in general at risk. 04.17PM 04.18PM

The message that I think created difficulties, and this does take us on to the question of the long-term health study was that, if you recognise that there is short-term risk from exposure to smoke and particularly particulate matter, does that lead to long-term health effects? 04.18PM

And the answer was, we don't know?---In the end the answer is that there is a clear gap in the evidence and that led us to the concept of a long-term health study, 10 year study at least, and hopefully that will answer some of those questions; notwithstanding that I cannot sit before you and say that a long-term health study means that in four weeks' time or in four months' time I can tell you what the long-term will bring, that's by its nature long-term. 04.18PM 04.19PM

The health message to be communicated in this instance was not that complicated; it was, inhaling smoke is bad for your health, we do not know the long-term effects of inhaling smoke that is present at Morwell and 04.19PM

surrounds, it's especially bad for vulnerable groups, we can identify those, the best thing to do is to get out of the smoke. That's not a complicated message, is it?---I actually think that is the message that was transmitted, with one exception, and that is that a distinction was drawn between the evidence of short-term exposure to smoke as opposed to the evidence of long-term exposure to smoke. So, we know there's ample, ample evidence, ample literature about the harmful effects of short-term exposure to smoke, there is ample evidence about the harmful effects of long-term, many years, of exposure to air pollution smoke and other - any particulate matter; there's a gap. 04.19PM 04.20PM

And the answer is, we don't know the long-term effects of exposure to the smoke that you're experiencing?---Yes, the literature at best suggests that it's unlikely that there are long-term effects, but you are right, there is a gap and that's a gap that we're attempting to close. 04.20PM 04.20PM

And it's that that the community had difficulty accepting. Do you accept that?---I think that's part of what the community have difficulty accepting, yes.

Thank you, I have no further questions for Professor Brook. Do members of the broad have any questions? 04.20PM

MEMBER CATFORD: Professor Brook, could I just ask you about the communication modalities. We've heard earlier in the hearings and also from public submissions that social media was a very powerful tool that was used to distribute information in those early days, often without commentary or interventions from agencies. 04.21PM

Does that suggest that we need to take this area much more seriously, and indeed, to what extent should your Department and others engage much more actively in managing social media?---Can I take that question in two parts. My first response is, if you look at the 04.21PM evidence of the Chief Health Officer, and indeed if you look at the evidence of the Chair of EMJPIC, you will see that social media was in fact extensively used; you know, Twitter and other things unpronounceable, were extensively used to provide messages to the community. 04.22PM

The criticism that came back from that was that there were significant parts of the community who were not net connected or didn't have iPhones and were not in receipt of those messages. That then got ought up in this whole thing about demographics, although I 04.22PM think they're not the same.

So one network may have been able to effectively communicate digitally, by one means or another; that's not to say that the message gets through using that method from a communications approach, particularly a 04.22PM central approach.

Don't forget that we also used paid media advertising; when I say "we", I'm talking the whole of Government. There was paid media advertising, there was press, there were press releases, there were many 04.22PM different aspects to the communication approach.

If the question is, should we be alert to social media, the answer is yes. But moving on to the second part of the question, controlling social media; isn't that what it's not all about? Isn't that an anathema 04.23PM for social media? So we can only hope to avail

ourselves of social media.

I will give you one example that was very successful in a different kind of emergency and that was the recent heatwave, Victoria's longest and indeed hottest or highest mean temperature, where we made use of the Seniors Registry to contact seniors on the internet and got a remarkably high strike rate. I was really impressed by that as a means of communication, that we just hadn't with that group, we'd tried before and in a sense it overcomes prejudices that say, this group of people isn't necessarily net connected; they sure are. So, there are different answers to your question. 04.23PM 04.23PM

MEMBER PETERING: Professor Brook, we've had witness statements and submissions from the community that there were members of the community experiencing blood noses, headaches, lethargy - members of the community experiencing acute health issues and that there was then messages by the Department that the situation was okay, that there wasn't a problem in the community - I can't sort of articulate the exact words, but that's some of the submissions, that there was this difference of what they were experiencing and what they were being told, which then I think went to affect the way the community was perceiving the element of trust portrayed by the Department of Health. 04.24PM 04.24PM 04.24PM

Can you comment on that specifically? We've had submissions and witness statements articulating that there was no level of empathy or that there was, I guess, a hearing that the community were displaying and asking questions about their health that weren't being 04.25PM

addressed?---Yes. I've probably spoken enough about the factual basis of presentation of the many forms of factual advice that come from the Chief Health Officer for particular reasons. I do want to make clear that, whether it was in the context of bushfires or in the 04.25PM
context of smoke more generally, the first health advice came in the EPA notice of 11 February, and that was followed by a health alert on 13 February which identified the problems that are associated with short-term exposure to smoke. 04.25PM

So it's no surprise to me at all that people suffered from a variety of effects. Those short-term effects are caused by the nature of smoke, its irritant nature, its relative acidity, but there were all form of other messages out there in the community that were 04.26PM
causing high levels of anxiety. We've heard some of them today. Some of them were about, for example, heavy metals. Now it happens that Latrobe Valley brown coal is not a pollutant source for heavy metals, it just isn't, it's different from black coal which 04.26PM
commonly is, and it's different from coal in other parts of Victoria.

So those sorts of messages didn't get out somehow or were listened to in ways that made the trust message more difficult. So perhaps I should avoid all that, 04.26PM
but simply to say, of course we recognise that people are going to face short-term irritation, sore nose, sore eyes, blood noses, dizziness, headache, all very classic symptoms of smoke exposure, and that's why we did actually see an increase - we expected to see, 04.27PM
frankly, a higher increase in attendances at medical

practitioners. That's also part of the reason why we established the Community Health Assessment Centre.

Do you think the Department portrayed that empathy or that understanding of those short-term impacts effectively?---I think I've probably said enough about my view of community engagement, which is where I think that it plays to in the end. There are different levels of communication for distinct purposes and we need to get them both right. 04.27PM

All right, thank you. 04.28PM

MS RICHARDS: I'm reminded that I should tender the White Paper on Emergency Management Reform. I think we're up to exhibit 45.

CHAIRMAN: As part of the same exhibit?

MS RICHARDS: I think it might be useful to give it a different exhibit number, there may be other witnesses who are asked to comment on it. 04.28PM

#EXHIBIT 45 - White Paper on Emergency Management Reform.

04.28PM

MS RICHARDS: I believe Dr Wilson has some questions of Professor Brook.

<CROSS-EXAMINED BY DR WILSON:

I have some short questions largely arising out of what Ms Hamilton said. Professor, you heard Ms Hamilton tell the enquiry that she wanted to know what was in the smoke and that was of particular interest to her. Do you recall hearing her say that?---I do. 04.28PM

Do you accept as a basic proposition that when communicating to a broad community, you not only need to know how best to get the message across, but what message to 04.28PM

convey?---Well, yes.

That's rather obvious, but you accept that?---Yes.

We've heard from various people who have given evidence before you that the community was reached by a collection of methods; Facebook, tweets, texts, TV broadcasts, radio, public meetings, letter drop and face-to-face contact. Accepting that, in your view in terms of the method of communications, could any other more effective method have been used?---The answer to that is, it's hard to think of a different method, but I will rely on my earlier answer to say that the use of established networks and trusted leaders is something that I believe we have to become in the business of doing. 04.29PM 04.29PM

No doubt you'd repeat that answer if I asked you, when trying to reach and communicate with an audience that simply doesn't believe you, do you accept that you have to find a circuit breaker in order for your message to get across and be believed?---Yes, but I'm not going to prescribe - not to misuse that term - a method, because I think it does need some very careful research and thinking. 04.29PM 04.30PM

In terms of the content of the message that was being conveyed by the methods I mentioned to you a minute ago, Facebook all the way through to face-to-face contact, was the content of the method appropriate in your view?---Notwithstanding my comments about the imperative for making sure that there is factual evidence-based information, there was other information over which the Department had domain, I draw your attention to the experience of the Community Health 04.30PM 04.30PM

Assessment Centre where essentially for 2,072 people it was face-to-face provision of the same factual information, provision in a different kind of trusted environment by ambulance paramedics and nurses, both trusted groups in the community. I personally think that was the most effective piece of communication which we as a Department undertook throughout this entire campaign period and, after all, it did win an award from the Association of Public Safety Communication Officers of Australasia. 04.31PM

The precise title is at paragraph 84 of your statement, public safety award from the Association of Public Safety Communications Officials Australia?---Correct.

That was in respect of your work with the establishment and activities associated with the Community Health Assessment Centre; is that right?---Correct. 04.31PM

Finally, you - when I say "you" - is the Department in the throes of its work for a long-term health study in respect of this incident?---Absolutely.

Can you tell us a bit more about that please?---Sure. The Department has spent some time looking at what the nature of the long-term health study might be. This is no trivial task, it is a 10 year study at least, 10 years because that's the limit of how we can really procure, but it may be renewed thereafter. 04.32PM

There is always a problem when embarking on long-term studies of what is baseline data, there is always a problem of making absolutely certain that you ask the right questions. If you put 10 years of effort into something and you ask the wrong questions, then it isn't really much good, so there's been a great deal of 04.32PM

effort and consultation, including expert advice, about the nature of those questions. We've made very sure that the people who have been consulted are not likely to put their hand up to become tenderers for this study. 04.33PM

We also engaged, after quite some internal discussion, with the community; we wanted to know the community's view, what they thought were the questions that were most important in a long-term health study. Probably No.1 of those concerns was long-term health 04.33PM impacts on children and so that's been very informative in terms of how we've shaped the study. That is pretty much tender ready.

So the process from here on, once it obtains final approval, is that that will be let by public request 04.33PM for interest, or indeed straightforward tender, and we would expect that, once we've selected the appropriate short-listed tender, we'll be in active negotiation about exactly how they would design the study, we're not going to prescribe - I've used that term three 04.33PM times - - -

I can understand that's not in the medical context?---We will not proscribe how that study is conducted; we want the best study we can get.

Were you satisfied that the EPA gave the Department all the 04.34PM information that the Department needed about critical health issues prior to 28 February when the Chief Health Officer gave her advice and up to 30 March when the community assessment was closed?---The Department is - well, the Chief Health Officer is virtually 04.34PM entirely dependent on data from the Environmental

Protection Agency about the nature of environmental hazard.

I do not make any comment on the EPA other than to note that there are two dates of importance; the first is 16 February which is the date we first received reliable information on carbon monoxide levels, particularly in the community, and the second is 22 February when we first received reliable information about PM 2.5 from the bowling club testing DustTrak - not DustTrak, it's from the bowling club on PM 2.5 information. They are in the Chief Health Officer's statement and I'll leave any further questions for the Inquiry to her evidence tomorrow. 04.34PM 04.35PM

Thank you, Professor. Thank you, if the Board pleases.

MS RICHARDS: No re-examination. May Professor Brook be excused, with my thanks? 04.35PM

CHAIRMAN: Yes, thank you.

<(THE WITNESS WITHDREW)

MS RICHARDS: Tomorrow's order of proceedings: Dr Lester will be the first witness in the morning, then Professor Donald Campbell will be called, and we have a community witness, Annette Wheatland, who manages Southern Cross Community Care here in Morwell. 04.35PM

CHAIRMAN: Thank you. We will resume at 10 o'clock tomorrow morning. 04.36PM

ADJOURNED UNTIL WEDNESDAY, 3 JUNE 2014