

REPORT ON PROCEEDINGS BEFORE

PORTFOLIO COMMITTEE NO. 2 - HEALTH

**HEALTH IMPACTS OF EXPOSURE TO POOR LEVELS OF AIR
QUALITY RESULTING FROM BUSHFIRES AND DROUGHT**

CORRECTED

At Macquarie Room, Parliament House, Sydney, on Wednesday 15 July 2020

The Committee met at 16:00.

PRESENT

The Hon. Greg Donnelly (Chair)

Ms Cate Faehrmann

The Hon. Emma Hurst (Deputy Chair)

The Hon. Natasha Maclaren-Jones

The Hon. Walt Secord

PRESENT VIA TELECONFERENCE

The Hon. Wes Fang

The Hon. Taylor Martin

The CHAIR: Good afternoon and thank you all for coming along this afternoon. People would be aware that this is the final hearing which has been set aside for the inquiry into the health impacts of exposure to poor levels of air quality resulting from bushfires and drought. People would be aware that the Government has made a submission to the inquiry and, indeed, through its witnesses, most of whom are present here again this afternoon—their submission is No. 47. We had the opportunity a couple of weeks ago to ask questions of the Government witnesses, which was very helpful to the inquiry, but we thought it might be of value to bring Government witnesses back again today, plus perhaps one other from the Environment Protection Authority, to provide a final opportunity for some questions to be directed to them and perhaps any matters that witnesses may wish to add to or explain or clarify their evidence in regard to the Government's position with respect to this inquiry.

ANTHONY SAVAGE, Unit Head, Environmental Solutions, NSW Environment Protection Authority, affirmed and examined

DAVID FOWLER, Acting Executive Director, Regulatory Operations, NSW Environment Protection Authority, affirmed and examined

MICHELLE DUMAZEL, Executive Director, Policy Division, Environment, Energy and Science Group, Department of Planning, Industry and Environment, affirmed and examined

MATTHEW RILEY, Director, Climate and Atmospheric Science, Environment, Energy and Science Group, Department of Planning, Industry and Environment, on former oath

SIMON HEEMSTRA, Manager, Planning and Predictive Services, NSW Rural Fire Service, on former oath

PETER DUNPHY, Executive Director, Compliance and Dispute Resolution, SafeWork NSW, on former oath

RICHARD BROOME, Acting Executive Director, Health Protection NSW, NSW Health, on former oath

The CHAIR: Was there going to be a plan to make a further opening statement in addition to what was done at the last hearing or will the plan be to just go straight into questions? What was the general plan?

Dr BROOME: We thought with the new witnesses, Ms Dumazel might like to make an opening statement just to clarify the roles of the agencies for the Committee, just for two minutes or so.

The CHAIR: That will be fine. Do that and then I will talk about how we will engage with the questioning between the members. Thank you and please proceed.

Ms DUMAZEL: Thank you. As I mentioned before, my name is Michelle Dumazel and I am the Executive Director of Policy Division. Policy Division is within the Environment, Energy and Science Group of the Department of Planning, Industry and Environment. The team responsible for strategic air policy issues, including the Clean Air for NSW strategy, is in my division. The team was moved from the Environment Protection Authority [EPA] as part of the machinery of government changes in mid-2019. We work closely with both my colleagues in the EPA, Mr Fowler and Mr Savage, and in the Science division predominantly Mr Riley, on air policy matters. We are working on finalising the Clean Air for NSW strategy by early 2021 and it is intended that further consultation on the strategy be conducted towards the end of 2020.

The CHAIR: With respect to those two members who are joining us remotely, their questions will come through via the Hon. Natasha Maclaren-Jones, to the extent that they do come through, and will then be presented to yourselves.

Ms CATE FAEHRMANN: For those of you who have come back a second time, thank you, it is very much appreciated. I wanted to start with questions to NSW Health and I think they would be best directed to Dr Broome. I refer to what I have before me, which is a guideline called *Public Health Response to Prolonged Smoke Events*. Are you aware of that guideline, Dr Broome?

Dr BROOME: Yes, I am. I have a copy of it in front of me.

Ms CATE FAEHRMANN: How was this guideline applied during the last bushfire season?

Dr BROOME: During the bushfire event we did refer to the guideline and I think our guidance and our approach would have been consistent with it.

Ms CATE FAEHRMANN: When you say you think it was consistent, was it consistent?

Dr BROOME: I believe so.

Ms CATE FAEHRMANN: Looking at the guideline, which I have just tried to get my head around—not just tried; I have been looking at it for some time—it appears that when you look at, for example, the table, table 1 on page 6, which looks at the response of, I assume, kind of public health units, if you like, and what public health units should do for a range of durations in terms of exposure to smoke from three days to three months, it kind of categorises this as low-level responses, moderate-level responses, high-level responses. Could you explain what that table is?

Dr BROOME: Broadly, the underlying premise with the response is that the longer that you are exposed the greater the risk is potentially and therefore the greater the action that might be warranted. I would say there are some challenges to applying this kind of framework because ideally you take action before the event, but

sometimes—as I think we probably discussed last time—it can be quite hard to know exactly what people's future exposure is going to be. But broadly, the idea is that if you know that people are going to be exposed for a more prolonged period of time to a certain level of air pollution, the level of guidance increases. For example, our first level is to say—and I have to refer to the table—if you are outdoors or if you are in a high-risk category you should reduce outdoor physical activity.

The second level, which is moderate, and I believe that would have been the category that we were in for most of the time during the prolonged event, if you look at the numbers or calculated the numbers, it is to increase that level of information to try and sort of support people in a more prolonged situation. For example, it advises people to take advantage of periods of time when the air is clear to aerate your house. So it is increasing the level to avoid indoor sources of air pollution, those kind of things. Then there is a higher level, which is when we think the risk is greater than one per 10,000, which talks about rescheduling outdoor events. Most of these we did actually start to provide this advice as well fairly early on in the event. So it is a gradual escalation, I suppose, of the response based on the prolonged nature of the event and not just what it is on a particular day.

Ms CATE FAEHRMANN: Was this guideline specifically used within NSW Health to plan your response? Were you looking at this guideline looking at the suggested concentrations of days or weeks of exposure against whatever levels of PM2.5? Were you assessing the response against these guidelines?

Dr BROOME: Yes. We were doing that during the event, yes.

Ms CATE FAEHRMANN: The publication date was 1 June 2017. Did you meet the guidelines in terms of the recommended responses? Because there is a range of different responses here for the community's exposure to moderate levels and high levels, which were not put in place or were not suggested by NSW Health. Is that correct?

Dr BROOME: Sorry, you will have to take me to the particular bits you are referring to. This is a guideline; we referred to it throughout and I would say—I do not know how many times this has been used in the past, but it was designed around, I guess, a more specific situation where you might have a point source of pollution. So there are some challenges to the application of this guideline in a bushfire event when essentially there are very, very large areas of exposure—for example, the advice to relocate within New South Wales could be challenging. Having said that, we were mindful of the guidance and we followed it, tailoring it to the situation that was facing us at the time.

Ms CATE FAEHRMANN: You would think that, therefore, during the bushfire event, in terms of the moderate level under this table, can you remember how many days over that event—for example, some of our worst-affected communities in terms of bushfire smoke were potentially exposed to moderate levels, say, for one month or two months. Yes?

Dr BROOME: The moderate level is a combination of both the amount of PM2.5 and the duration; so it comes into the same calculation.

Ms CATE FAEHRMANN: That is what the table says, yes.

Dr BROOME: So yes, that is right. Sorry, it has been some time since the event, but my recollection is that we would have classified the situation as moderate.

Ms CATE FAEHRMANN: However, I think Sydneysiders were exposed to a record, I think it was 81 days combined of hazardous, very poor or poor air quality. I think there were 28 days of hazardous air during that time, which is 200 micrograms—

Dr BROOME: No, that is an air quality index of 200, which is 50 micrograms or above.

Ms CATE FAEHRMANN: Fifty micrograms—so that is moderate.

Dr BROOME: I know this is difficult but that is not related to this assessment. This assessment looks at the overall average concentration for a period of time which takes into account all those occasions.

Ms CATE FAEHRMANN: So you assessed the exposure as moderate?

Dr BROOME: Yes.

Ms CATE FAEHRMANN: Therefore, you have to consider proposed actions for public health units. The chart I have before me suggests that the proposed public health messages during this time were to keep doors and windows closed; turn on recirculated air in home air-conditioners and car ventilation; to keep house clean to

avoid re-suspension of particles; to take advantage of any breaks in smoky conditions and air out your home as conditions may deteriorate. Were all of these incorporated into the public health messages that you—

Dr BROOME: They were, yes. They would not have been precisely those things, but the broad principles—for example, making sure that you were not re-suspending particles or not having indoor sources of air pollution like incense sticks and candles—all those messages were delivered regularly throughout the event.

Ms CATE FAEHRMANN: Then when it says "proposed actions for public health units" there is a column that says "All of the above", which "all of the above" is for low risks, which is "Advise public about health effects of smoke, related symptoms and ways to minimise exposure" and also "Monitor conditions and forecasts to continually inform risk assessments." Then you have "All of the above and consider: Issue public messaging through agreed communication channels." We will just stop there. First of all, remind me what the agreed communication channels were.

Dr BROOME: Primarily those are through the mass media, but we also use social media—we developed videos, for example, that we provided to local health districts to circulate through their own channels. But primarily mass media and social media.

Ms CATE FAEHRMANN: Was there any discussion about what is contained throughout these guidelines, which is clean air shelters?

Dr BROOME: There was discussion of that and our approach to that was to recommend to people that they should, if they need relief and they cannot obtain it at home, for example, attend places where we know they have high-quality air conditioning—places like shopping centres; so essentially places with industrial air conditioning which tends to have relatively high-quality filters and therefore will provide some shelter. That was how we pushed that message given, as I say, that a very, very large population of people was exposed and they would generally have access to those sorts of places.

Ms CATE FAEHRMANN: Is that the meaning of the term "clean air shelters" in here? Does that mean air-conditioned shopping centres or is there a different application of—

Dr BROOME: I think—and this is guidance—there is an element of judgement and I think it is advising people to go to a place where they are likely to get air with less particulate matter in it essentially, yes. So I think that is consistent.

Ms CATE FAEHRMANN: Because it suggests something potentially different here as well and I wonder, considering the department has had these guidelines in place since during 2017—firstly, just having a look at the definition here of what it suggests for clean air shelters, it says:

This can include discussion with partner agencies about facilities that may be appropriate for use as clean air shelters during times of severe air pollution (for example, a re-purposed library or community centre). A clean air shelter provides significantly cleaner air indoors compared to outdoors through air conditioning or another type of air filtration system, and tight-sealing windows and doors.

That was a specific question around whether there was a different application of the term "clean air shelters" from shopping centres and there is.

Dr BROOME: I would argue they were the same thing. They are places along those lines where you have high-quality air conditioning and sealing. But what I would say is we actually did consider this. For example, in Port Macquarie, we recommended that people could use the library, and actually some work was done by the University of Tasmania to measure air quality in the library and out of the library to ensure that our advice was reasonable, and it showed that the air quality inside the library was better than it was outdoors, which is not unexpected. We have reasonable evidence that, by and large, large venues with high-quality air conditioning, where they have an interest in sealing their premises, are likely to provide better air quality. We are talking about a population health measure where we are trying to provide something that everybody in the whole community potentially has access to. We were mindful of what the definition was and we tried to adhere to that in our advice.

Ms CATE FAEHRMANN: Just to take a step back, what warnings was NSW Health given, if any, by the RFS and the Bureau of Meteorology about the impending fire season and the potential, therefore, for extreme, hazardous air quality events? Was there any warning? I could throw to the RFS for this.

Dr BROOME: What I would say is that obviously the whole Government is involved in regular briefings about the coming season, climate briefings from the Bureau of Meteorology, and I think obviously there is a general acceptance that we were in a very high-risk fire season. But I might throw to the RFS, if that is all right, for more detail.

Dr HEEMSTRA: We were having quite frequent briefings leading into the season about our concerns for this fire season. It was across all government departments we were having those conversations. Leading into this last season we held our pre-season briefings early; we brought them forward because we were anticipating a challenging season—probably not as challenging as what we got, but we were anticipating that.

Ms CATE FAEHRMANN: Therefore, NSW Health has had this in place since June 2017, they were part of whole-of-government briefings around impending fire seasons, which ordinarily meant longer days of exposure to moderate and hazardous levels—moderate and high levels I think it says here—but there seemed to be a delay in proactive messages from NSW Health to the community about taking measures to reduce their exposure to poor air quality until things got really bad. If you look at this it would seem that the measures in this guideline to, for example, warn people about staying indoors, recirculating air conditioning, all of that, let alone getting to air shelters, were not put in place until it was very clear that we had already surpassed the low exposure levels in here and the moderate levels. Why was NSW Health not proactive in terms of its messages to the community?

Dr BROOME: I would dispute what you are saying. This fire season, for us, began in Port Macquarie I think in late July or August and these messages were delivered in Port Macquarie in late July or August. Then obviously the effects on Sydney happened in late October, early November, and we would have been delivering these messages within a few days of that when it was clear that this event was going to continue for some time. So I think I would dispute what you are saying. We delivered these messages early on in the event.

Ms CATE FAEHRMANN: When you look at it going through, for example, various media, which is one of the main sources we have, as well as tweets and social media and what have you, you do not seem to be recommending people, particularly vulnerable people such as pregnant women, for example, avoid being outdoors, which it does say in here, until well into the piece. I think this potentially might change but it would be good to hear if NSW Health is going to change how much it proactively alerts vulnerable people to avoid poor air quality in relation to bushfire smoke, but it was not happening. When you look at the public responses you seem to be in some ways weeks behind the time when things were ticking over from low to moderate, according to your chart.

Dr BROOME: I am not entirely sure why you are saying that because my position was as the main NSW Health spokesperson on this and we were delivering these messages from very early on in the piece in Sydney, for example, where NSW Health often takes a more centralised role. I agree that we can, based on the experience, learn to refine things; for example, we are working with various groups to try and improve our messaging around providing good, helpful and not alarmist advice for pregnant people, for example. So we will continue to do that sort of thing, but we were providing this advice through the media, doing press conferences, all sorts of things from very early on in the event. I guess I am uncertain as to why you think that we were not delivering these messages. It might have taken us a week perhaps or two weeks before we would have started saying this is clearly a prolonged thing, but it would not have been, I do not think, a great deal more than that.

Ms CATE FAEHRMANN: Can I just get you to explain what you were saying then in terms of informing, for example, pregnant women with messages but not being alarmist?

Dr BROOME: If you look internationally at a lot of health agencies, often they will say pregnant women are a high-risk group and therefore more vulnerable, so we have delivered that message. But I think what we need to do is provide a better message that describes in more detail for people what that actually means. This is a concept, I guess, for the Committee to consider, but there is a difference between hazard and risk; for example, we know that air pollution is a hazard, but the likelihood of something serious happening to you, which is the risk, is usually fairly low for most individuals, and that includes pregnant people as well. It is trying to develop a balanced message that adequately informs people so that they take appropriate action but equally does not cause them more alarm and concern than is warranted, which could have its own problems, I think. It is about trying to develop a more nuanced message around pregnancy.

Ms CATE FAEHRMANN: But you will acknowledge that more people died of course during this bushfire season as a result of smoke exposure and air quality than from the actual fires themselves.

Dr BROOME: I think that is what the risk assessment done by the University of Tasmania suggests, yes.

Ms CATE FAEHRMANN: Does NSW Health therefore have a dedicated team assigned to researching the health impacts of bushfires and drought?

Dr BROOME: We support others in doing that. We do have dedicated staff who support the development of policy. I would say NSW Health's role in the broader government approach to air pollution is around the translation of epidemiological evidence into information that is useful to the actual agency or the policy-makers in the agencies with air quality management responsibilities. Yes, we have a small team of people who work on these sorts of issues. For example, at the moment, given this event, we are supporting research to do analysis essentially to work out what the effect of this bushfire actually was, based on the observed evidence that we have. So, yes, we support research by researchers.

Ms CATE FAEHRMANN: When you are saying it is a small team of people working on these issues, is it a smaller team than what it used to be? Have there been staff cuts in areas looking into—

Dr BROOME: No.

Ms CATE FAEHRMANN: So what is the small team and what are their positions?

Dr BROOME: I think we would have a team of—sorry, I might have to take it on notice.

The CHAIR: You can take it on notice if you need to.

Dr BROOME: It would be approximately five full-time equivalent.

Ms CATE FAEHRMANN: So any kind of allegation or accusation that NSW Health may have, under a recent restructure, moved resources out of an environmental health branch there is unfounded?

Dr BROOME: I guess when restructures happen—I do not know what that allegation is.

Ms CATE FAEHRMANN: Has there been any change in focus from research into environmental health risks, such as risks associated with things like climate change, heatwaves, droughts, bushfires, has there been a shift in focus within your area?

Dr BROOME: No, I do not think so. I am just trying to think of the best way of answering. We do not do research as such in NSW Health. As I say, we support other people in doing research, including colleagues sitting here, and we assist in policy development by providing input around health issues. I think the focus has been fairly constant.

Ms CATE FAEHRMANN: I suppose just as a result of the recent summer and given the extreme concern and the fact that we are having this inquiry and the fact that the research that you have just referred to from the University of Tasmania in terms of the number of increased hospital admissions and potential deaths, how are you currently resourced in terms of responding to that as a health issue in terms of researching the likelihood of increased episodes and what your response should be? If you are drawing on other agencies, is that an RFS issue? From our perspective, we need to be confident that NSW Health is recognising the severity of this and increasing their resources, I would suggest. Well, The Greens would think that anyway.

Dr BROOME: I completely agree with you that what this summer has put a great focus on is environmental health. NSW Health absolutely supports and maintains a strong focus on environmental health by supporting and collaborating with a range of other government agencies with more direct influence over environmental matters.

Ms CATE FAEHRMANN: I think this is really important given that we are going to see—the links between health and a poor environment are strong links, would you agree?

Dr BROOME: Yes.

Ms CATE FAEHRMANN: Within NSW Health, is there a dedicated team looking at the health impacts of, for example, bushfire and drought and advising NSW Health and government accordingly to prepare and plan?

Dr BROOME: We have a dedicated team of people who are expert in environmental health risk policy across the board. At the moment they are looking at bushfire risk and air pollution risk and support the Government as it works to address those things, and we are adequately resourced to do that.

Ms CATE FAEHRMANN: When you said across the board, does that mean there is not a team? You are saying that just generally there are people who understand environmental health within NSW Health?

Dr BROOME: My substantive position is Director of Environmental Health Branch. Environmental Health Branch has a range of focuses, but one of them is supporting the New South Wales Government as it develops policy around environmental health risks.

Ms CATE FAEHRMANN: Okay, you are Director of Environmental Health Branch. We have you down as Acting Executive Director, Health Protection NSW.

Dr BROOME: That is my current position in the COVID environment, but my substantive position is director of environmental health.

Ms CATE FAEHRMANN: I was going to get to the potential shifting of resources within the health department from an environmental health perspective to, say, planning for a potential next bushfire season, which I would like to ask the RFS about as well in terms of what that looks like over the next year or two or three. Right now we are in a pandemic, so the New South Wales environmental health director is now Acting Executive Director of Health Protection working largely on COVID. Have other resources within your environmental health area now been focused on COVID as well?

Dr BROOME: It is fair to say that NSW Health has had to reprioritise what it does around COVID. Within all our branches, we have to reprioritise our work. What I would say is that bushfire smoke continues to be a real priority for us.

The Hon. WALT SECORD: You mentioned reallocation involving COVID. During the air quality issues and the bushfires, did NSW Health examine face masks?

Dr BROOME: When you say "examine", what do you mean?

The Hon. WALT SECORD: Did you look at whether they were effective or whether they work? What was the research at the time?

Dr BROOME: There is very little research. I think we have a statement on our website which I think probably says it reasonably clearly.

The Hon. WALT SECORD: What does it say, from memory?

Dr BROOME: The right sort of face masks, P2 face masks, are effective at removing the fine particles in bushfire smoke but they have to fit well, so it is not entirely clear how well they will work in practice.

The Hon. WALT SECORD: When you say that they fit well, do you mean the seal on the top?

Dr BROOME: These are really tiny particles. As soon as you have any sort of gaps caused by facial hair or anything then they cease to be effective.

The Hon. WALT SECORD: So they don't work with beards and things like that?

Dr BROOME: No. Essentially, we have a message that says that, but there might be certain circumstances where we would recommend them. Our first advice is to avoid the exposure in the first place by staying indoors and reducing activity. Masks would not be a first-line thing but there might be circumstances where they are appropriate.

The Hon. WALT SECORD: If you had situations where you had to go outside and engage in activity, or transport yourself from point A to point B, you would recommend having a mask over not having a mask?

Dr BROOME: I could not even say that it was better in those circumstances quite honestly, but there might be situations where you absolutely have to go outside and there is really severe smoke—for example, in the context of some of these areas which were directly affected when you do not have the opportunity to stay indoors. In those sorts of circumstances, a mask might be beneficial.

The Hon. WALT SECORD: What about for pregnant women, the elderly, the immune compromised or health workers?

Dr BROOME: The best thing to do is remain indoors and avoid exposure.

The Hon. WALT SECORD: The advice on face masks during periods of poor air quality, would the same research apply to face masks in New South Wales involving COVID?

Dr BROOME: I am not sure we are quite within the scope but no, they are different issues.

The Hon. WALT SECORD: How are they different?

Dr BROOME: One is about protection from PM2.5 and another is about protection from droplets that virus particles are transported on.

The Hon. WALT SECORD: So the research involving air quality involving face masks is not applicable to face masks for COVID?

Dr BROOME: There is very little research about face masks in air pollution events.

The Hon. WALT SECORD: Very little research in Australia or just very little research?

Dr BROOME: Very little—full stop.

The Hon. WALT SECORD: There is very little research involving face masks?

Dr BROOME: Yes, in air pollution events. There is a lot of research that shows that if these masks fit effectively and you have got the right sort of mask then it filters out a certain sort of particle as long as it fits well. That is predominantly around occupational settings where they are used, but there is very little research into the population health effect or the effect it might have in a bushfire event.

The Hon. WALT SECORD: What is the current advice from NSW Health involving face masks and the current COVID situation we are in?

Dr BROOME: I am not sure that is something—I am kind of treading outside of my area here.

The Hon. WALT SECORD: I am just seeking a bit of latitude here. We are an inquiry. You have said that you are now dedicating your resources to COVID, so I thought I would take the opportunity to ask the question.

Dr BROOME: As I say, it is not really my policy area at the moment and it is not within the terms of reference of this Committee, so I am just a bit uncomfortable with that.

The CHAIR: As you would be aware as agencies represented here this afternoon, there is the NSW Bushfire Inquiry that has been undertaken and chaired by Professor Mary O'Kane. With respect to the agencies represented here this afternoon, which is Department of Planning, Industry and Environment [DPIE], EPA, NSW Health, SafeWork NSW and NSW Rural Fire Service, have any of those agencies made submissions to that inquiry?

Dr HEEMSTRA: We have responded to questions and been examined through the inquiry.

The CHAIR: Thank you very much. The RFS participated to the degree that was described. Let's just go through them. The representative from DPIE, are you aware that—

Ms DUMAZEL: That is the same for Environment, Energy and Science Group.

The CHAIR: You answered questions—

Ms DUMAZEL: Not myself personally, but I understand that there have been officers who have been answering questions and participating.

The CHAIR: Was a submission made?

Ms DUMAZEL: Not that I am aware of.

The CHAIR: We do not believe that the NSW Rural Fire Service made a submission to the inquiry, as far as you know?

Dr HEEMSTRA: No. Many of our staff, including myself, were interviewed as part of that inquiry. We received many questions and we have given a lot of written responses to questions in the inquiry.

The CHAIR: And NSW Health, did you make a submission?

Dr BROOME: We responded to questions and provided written answers, so I guess that was a submission.

The CHAIR: Did SafeWork NSW make a submission to the inquiry or participate in the same way as the other agencies have described?

Mr DUNPHY: I believe that might be the case, but I would like to confirm that.

The CHAIR: Would you like to take that on notice?

Mr DUNPHY: Yes, I am happy to answer that.

The CHAIR: That has been helpful. Just to be clear, the purpose of this inquiry is obviously to see what we as a committee can distill down and produce as recommendations back to the Government. That is what we are very keen to do. We want to try to refine and produce the best and most useful recommendations we think may assist the Government. In doing so, what has been exercising my mind, and perhaps the minds of some of the other members, with the bushfire event that has focused our minds—if we take for example the representatives here today, we have representatives from five government agencies, and all of those government agencies in their own way were part of the collective response of the State and the New South Wales Government to the communities in New South Wales of how to deal with what happened in the circumstances. Often in inquiries we hear about the issue of how it is possible—to use the vernacular—to "break down the silos" between agencies, departments and what have you.

I am not putting that in a pejorative sense to suggest that there has been a failure, but rather to flip it around and say obviously there are very expert professionals in all of these agencies doing work within their respective remit, and obviously they all participated in the State response to the issue. Are these agencies working on trying to establish in a cooperative fashion the best learnings that can be taken away from the event that can help us deal with this better in the future? In other words, we hope that these events don't happen regularly, or anything like regularly, but we would like to think that as time goes on we are able to respond in a better way than we did in the past and so on. In terms of being able to get the agencies to come together and work in a more coordinated fashion—and once again I am not suggesting that there has been conflict but rather the meshing together better of the State response—are there any comments you would like to make in that regard? We think that there is always scope for how we can encourage and perhaps suggest the ways in which there can be a better meshing between agencies or departments.

Mr RILEY: I think a good way to start is to focus on an area where we have actually built a very good working relationship across multiple agencies, one that has particular relevance to this Committee and this hearing, and that is the New South Wales hazard reduction smoke management committee. This was a committee that was established several years ago in response to some concerns regarding the impacts of smoke from hazard reduction burns on some busy weekends—I think one Mother's Day weekend. That committee is co-chaired by DPIE Environment, Energy and Science and RFS. It has representatives from the EPA, representatives from NSW Health, Fire and Rescue NSW and also the Bureau of Meteorology. That group has worked very diligently over a number of years to put together some protocols for the communication of the management of smoke impacts around hazard reduction burns.

There are two working groups that support that committee. One working group is focused on the communications and one working group is focused on better predictive services, or better modelling, so that we as a government are more aware of what the potential impacts are from smoke from planned hazard reduction burning activities. I think it is a really good example of how the agencies have come together and worked together to improve not just communications but to improve planning. A specific example along these lines would be the smoke modelling activities that occur during the planning of hazard reduction burns. RFS has smoke modelling capabilities, so does DPIE Environment, Energy and Science. The protocols support us in sharing information from our different perspectives and then working together to ensure that we can help minimise any smoke impacts from planned hazard reduction burning events.

Over the past summer we took many of the directions that the smoke management committee had put in place for hazard reduction burns and we tried to implement the communications in terms of wildfires. My understanding is that the committee is discussing whether to expand their remit to cover wildfires or bushfire events as well as hazard reduction burning. That is a very good example of how we have worked together. Another one that I may add as well is looking into the future. There is an advisory group on climate change which provides advice to the State Emergency Management Committee. Ms Cate Faehrmann asked earlier about climate change, and that is one of the key ways that we are providing information on how climate change will affect hazards across the board, but of course including bushfires and droughts, and how that can be better incorporated into our State Emergency Management Plan. I think they are two very good examples. From my perspective, I think we were working well together beforehand, and the hazard reduction burning smoke management committee certainly demonstrates that, but I think that we are continuing to build stronger working relationships off the back of this event.

The CHAIR: Specifically, has there been some work commissioned whereby there is a review being undertaken to actually see how it was all managed and handled and what the learnings might be about how they can be improved into the future? In other words, the event has passed now. No pun intended, the dust has settled. What is being done to actually take a good hard look at what the response was and say, "This went well; we can use this again or refine it further. This didn't go so well; we need to look at that again." Is there some work being

commissioned by government across its various agencies to look at the response and make an assessment of the response?

Mr RILEY: I might refer that to my colleagues from RFS or EPA, because they have line management responsibilities under the State Emergency Management Plan.

The CHAIR: I would be keen to find out if anyone can enlighten me on that.

Dr HEEMSTRA: We do have a good mechanism already in place for looking at hazard reduction with the committee that Mr Riley spoke about. We are working with that committee to look at how we can apply the learnings and the processes that we have used for hazard reduction into a wildfire predictive capability. Part of the other challenges we have with wildfire is that the bushfire smoke goes beyond State boundaries, so modelling bushfire effects from other States into New South Wales can be challenging. Through the Australasian Fire and Emergency Service Authorities Council, we have been working on national protocols. We have also been working with the Bureau of Meteorology. They are using a smoke and dispersion modelling program called Air Quality Forecast system that we are looking to use for better national modelling. One of the challenges we have is the fact that this is still an evolving and developing space. We are doing the best practice we have at the moment, but we are also working and engaging very actively with researchers. The work that is being done through the OEHL hub is quite critical and the RFS is actively engaged in that work.

Ms CATE FAEHRMANN: Sorry, what is the OEHL hub?

Dr HEEMSTRA: The Office of Environment and Heritage has a research hub that is being coordinated through the University of Wollongong. It has got various streams looking at biodiversity and fire risk, but one of the streams is looking at air quality effects. It centres through Wollongong but there are various other universities engaged. The work that has been done through University of Tasmania is also being collaboratively done through this hub. That is quite important work but there is work being done through the CSIRO and Bureau of Meteorology. There is quite a lot of research in this area. The dispersion models, I think, are improving as far as how we go on the predictive sense, on that side of things. One of the challenges we are facing is: How do we feed the inputs to those models? With hazard reduction, we know how much is planned to be burnt but particularly using the fire behaviour analysis capabilities through the Rural Fire Service, how can we get better inputs into these models more dynamically to better understand and feed those models? If you put garbage in you are going to get garbage out for your prediction for these models. There are various levels of complexity that we are trying to address, we are aware of and we are working through.

The CHAIR: It involves continuous improvement and that is really what hopefully the Committee is going to do and in our own small way contribute to some thoughts about how that can be moved forward even quicker. Does the EPA have any comments?

Mr FOWLER: Not specifically. Mr Riley mentioned our involvement in the State Emergency and Rescue Management Act emergency management response, if you like, to the bushfires. The EPA has a role within that framework through supporting the combat agencies around environmental services. While not directly involved in that work for the EPA, it is that overarching emergency response framework for engaging community and across government. I am not sure whether RFS have a view of whether that is an opportunity.

The CHAIR: Can I move to my line of questioning on the clean air strategy, specifically on the matter of large smoke events like bushfires and wildfires or the large events that we have seen in the last year or two of dust coming in from the centre of Australia across New South Wales. These are very large events and obviously there is a heightened public awareness of the concern from a public health point of view. Are there detailed considerations with respect to both of those, which obviously form the focus of this inquiry, in the consideration for the development of the new clean air strategy?

Ms DUMAZEL: I think it is important for us to consider particularly what has happened over the past summer with the bushfire events and the preceding drought for us to look at that and also to see what comes out of the inquiries that are out at the moment in terms of air quality and clean air for New South Wales.

The CHAIR: When you say "inquiries", are you referring to the Commonwealth royal commission and the New South Wales bushfires inquiry? Are they the two specific inquiries that you are thinking of or other inquiries?

Ms DUMAZEL: Yes. I think it is important that we consider any findings that come out of inquiries prior to our finalisation of the Clean Air for NSW strategy. We are planning a consultation towards the end of the year but really what has happened over the summer period will be considered and we will be working quite closely

with our colleagues in terms of the analysis and the thinking as we develop what we might put forward for consideration by Government.

The CHAIR: There might be some others who want to ask questions along this line; I will come to them shortly. One of the matters that seems to be of particular importance—and it has been ventilated by other witnesses to be inquiry—is the ability, the capacity and, I guess, the speed in which the information about an emerging event can be considered, assessed and then accurately communicated out to the public at large in an effective way whereby individuals can access that information in a timely fashion to help inform their decisions about what they may be able to do. Quite clearly, if a person is able to take, dare I call it, defensive action and stay inside when something is about to come, so to speak, then that may well be the best advice for them.

In terms of the clean air strategy, I am not asking you to make any concessions about what is going to be in it at this stage unless you would like to—we are very happy to hear what is on your mind in terms of the strategy's development—but are matters like that being looked at? In other words, are they being taken to that level of consideration in the clean air policy—some very practical, clear pieces of advice that can form a part of ultimately what might become the standard way in which we in New South Wales deal with these sorts of events? Is it going to be quite specific or is it more of a broad or macro sort of document?

Ms DUMAZEL: At this point, what we are doing is looking to see what we have actually achieved since the consultation process previously on clean air, looking at the events over the summer period, of course taking into account the monitoring, the research and the changes that we have made to our monitoring system over the past couple of years and earlier this year as well in terms of communication of those messages. I think it will be important to continue to consider that. I suppose the other aspect that we are thinking about is: How does it fit in with what Government has been doing overall in relation to air quality in New South Wales? I am just thinking, for example, we now have the Net Zero Plan Stage 1 and there are quite a number of actions in that over the next 10-year period that look at things like electric vehicles, emissions from vehicles.

It looks at renewable energy. It also looks at energy efficiency and, for example, manufacturing and agricultural processes and the emissions from that. We will be taking that into account. We will also be thinking about what is happening from a Planning perspective and how we are working with our Planning colleagues, as well as what has happened over the past year in relation particularly to bushfires and air quality. We will certainly be working with our colleagues here and within government and also looking at the research to see what needs to be included. I think what will be important will be the consultation period towards the end of the year before we finalise what the actions will be.

The CHAIR: Without giving away the game, is it going to be a broad community consultation exercise? Is that the plan?

Ms DUMAZEL: At this point we are still working through the details.

The CHAIR: If it all goes to plan, fingers crossed, are we talking hopefully mid-2020 that the strategy will be done and dusted?

Ms DUMAZEL: My understanding is that the expectation is that we'll have something ready in early in 2021.

Ms CATE FAEHRMANN: I will go back to Dr Heemstra in relation to the projections. I think I tried to ask you the last time as well; we never got there and we almost missed it this time, too. What are you predicting, or can you, in relation to bushfires and, therefore, hazardous air quality potentially over the next five to 10 years? What would you be advising Health?

Dr HEEMSTRA: Five to 10 years?

Ms CATE FAEHRMANN: You tell me.

The CHAIR: And I will borrow your crystal ball when you are finished with it.

Ms CATE FAEHRMANN: What is your position again?

Dr HEEMSTRA: Manager of predictive services.

Ms CATE FAEHRMANN: There you go. Thank you. It is more than 12 months.

The CHAIR: It is on you.

Dr HEEMSTRA: We do have a seasonal outlook as far as where we are heading for the next fire season. Particularly looking at this year compared with last year, we are in a marginal La Niña year. There is a slight

chance of having a wetter-than-average year. Particularly looking at the difference from last year to this year, with the drought we had last year, there was no issue really in grass because there was nothing there; this year we are seeing, because of the rainfall we have had, there is a much higher risk of fires in grass areas. If you look at the risk in forested areas for this year, one-third of forested areas burnt in the fires last year. We had 5.5 million hectares burnt; probably four million of that was forested areas. But there is still two-thirds left that did not encounter fire so there is a significant amount of vegetation there that is available with higher fuel loads.

Over the next five years, the areas that have burnt will regenerate and also gather more fuel. We are seeing with the changing climate that warmer fire seasons are starting earlier and they are lasting longer. The fire events that we are getting—things like pyro-convective fires, the fire-generated thunderstorms—are more frequent. As far as the projection into the future, it is much more likely that we are going to see these sorts of large-scale fire events as we go. It is a pretty quick summary with the time allowed.

Ms CATE FAEHRMANN: I might just go back to Dr Broome in terms of the discussions around the environmental health and the resources within the environmental health branch planning for what could be, this summer, more instances of many days at potentially moderate level, according to your guidelines. How many people within your unit are planning at the moment for a public health response this summer in relation to air quality?

Dr BROOME: As I mentioned, we have a team that focuses on a range of things but one of those things is bushfire response. One thing that has not been mentioned but was mentioned last time is that one of our focuses is on developing a nationally consistent approach around air quality communication, which was something that was highlighted. That is a big part of it: having a system that makes it easy for people to understand and interpret information so that we are ready because we recognise, as Dr Heemstra just said, that these risks are increasing.

Ms CATE FAEHRMANN: Given where we were last year and recognising where we could be again this summer and the next and the next, is some of that now working with—because if you look at what is the high risk of mortality over time, not moderate but high, because some communities were exposed to that—

Dr BROOME: Yes.

Ms CATE FAEHRMANN: Does that involve working with partner agencies and urging them to look at what areas within communities can be designated specific clean air shelters, as your guidelines suggest needs to happen? Is New South Wales working with communities and suggesting to them that they need to identify within their communities what clean air shelters are so that vulnerable people can access those shelters, if they need?

Dr BROOME: We have not done specifically what you say there but as I say, we—

Ms CATE FAEHRMANN: But this is what your guideline says.

Dr BROOME: My response is that, as I said earlier, we believe, generally speaking, guidance is that places like libraries, community centres, shopping centres and indoor venues with air conditioning are likely to provide protection, so that is something that any community can take on.

Ms CATE FAEHRMANN: Can vulnerable people sleep in those shopping centres?

Dr BROOME: So then we are getting into—

Ms CATE FAEHRMANN: If the air is hazardous over, say, a two-week period, and there are people who are particularly vulnerable, is this guideline suggesting that they go and hang out at their shopping centre all day and come back and sleep in their home at night because we know what happened with, for example, the woman whose sister presented to this inquiry?

Dr BROOME: That is one of the really tricky issues with these prolonged smoke events because what you are talking about really is evacuation around PM risk.

Ms CATE FAEHRMANN: This is what this guideline suggests as well. Has the Government abandoned some of what is in this guideline when it comes to what you should be advising people in relation to high-risk smoke events because that is one of them which is potentially having to seek somewhere where they can access clean air for a prolonged period. That is what is in this guideline.

Dr BROOME: I think the guideline says—and sorry, I would have to look—that in situations of high risk, you could recommend to people that they might seek shelter elsewhere. I think all these things are things that need to be considered going forward. As you know, this last summer period was unprecedented and we learnt a lot of lessons. We have had feedback from the community and we are responding to that. A lot of the feedback

was specifically in relation to the communication and the need for real-time information so that people could make informed decisions right there and then.

The CHAIR: To the Environment Protection Authority representatives here: In terms of the EPA and its remit, if I could use that word, with respect to dust and smoke events, is there a way in which the Committee can inform itself specifically what that remit is, by itself and perhaps vis-a-vis the other agencies? We are trying to work out clearly in our mind what that remit is and how it links in with the others. If you need to take that on notice—because we have run out of time and we would require a bit of an explanation—that is fine. We just interested to know how that fits in.

Mr FOWLER: Yes. I think that is one of the challenging areas. From the EPA's perspective, largely our remit around air quality is industrial emissions, direct regulation of industrial emissions and then working with local government, for example, around other potential sources of that impact on air quality—wood smoke, for example—and working with councils. Around the major event, bushfire events, we were engaged as environmental services representatives through the combat agencies, but largely our role was that we would be a conduit for any of the messaging coming out of Government through our networks and then more so in the recovery around waste, waste management and protecting communities in that space.

The CHAIR: That has taken us beyond five o'clock. Thank you very much. We do appreciate that you are very busy in your respective roles. Thank you for all that work that you do, very important work that it is, in the context of the emergency situation like we did have over the Christmas period late last year into this year. Thank you for that brave work and particularly pass those thanks on to people down the line. It something we would like you to do. There may be some questions on notice arising from us reading *Hansard* following the hearing today. What we would normally do is have our secretariat liaise with you in regard to those questions on notice. There is normally a 21-day turnaround time, if that is convenient. Once again, on behalf of the Committee, thank you very much for the great work you do.

(The witnesses withdrew.)

The Committee adjourned at 17:00.