

# TRANSCRIPT

## STANDING COMMITTEE ON THE ENVIRONMENT AND PLANNING

### Inquiry into fire season preparedness

Melbourne — 19 July 2016

#### Members

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Ms Harriet Shing — Deputy Chair

Ms Melina Bath

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#### Witnesses

Mr Nial Finegan (affirmed), Chief Executive Officer,

Dr Anthony Boxshall (affirmed), Group Manager, Applied Sciences,

Mr Jamie Twidale (affirmed), Manager, Emergency Management,

Mr Damian Wells (affirmed), Executive Director, Regional Services, Environment Protection Authority (Victoria).

**The CHAIR** — I welcome people and declare open the EPC hearing on fire preparedness. I welcome the EPA members to the hearing. If we can perhaps ask you, Mr Finegan, to begin with a short presentation, and then we will follow up with some questions.

### **Visual presentation.**

**Mr FINEGAN** — Thank you, Chair, and thank you, committee, for having us here this morning to share our evidence with you. This morning I have invited three of my colleagues to attend with me so that we can answer any questions that you might have for us. On my extreme left is Damian Wells, who is the executive director for regional services and responsible for service delivery across Victoria, and Jamie Twidale, who is our emergency management manager. That is a new role into the EPA and is reflective of our new capability and competence. Jamie has made a significant contribution to the EPA, which I would like to acknowledge here. On my right is Dr Anthony Boxshall, who is the leader of our science group and who leads a lot of our conversations on smoke protocols and working with the Department of Health and Human Services and importantly the community. He is also making a significant contribution to our capability in our fire preparedness.

I have given you each a copy of the slides, and I will just run through and draw out some of the key points. We are going to share the presentation with Dr Boxshall when we get to some of the technical detail at the back.

The EPA's role in fire emergencies: in the first part of it we do a lot of work in preparedness, and we do this through our normal day-to-day work in enforcing the Environment Protection Act to reduce the likelihood of emergencies. By way of example, we do this through licensing facilities, permitting waste and regulating parts of industry. Probably a very optic example would be our work in licensing tyre recycling. This time last year we had no companies in Victoria licensed to the new regulations to store tyres, and now we have two companies in Victoria that are properly licensed. Through that licensing process we look at fire risk and community risk and work with other agencies to make sure those risks are managed on site.

We also do a lot of work with our agency partners to make sure that we provide advice on environmental impacts of emergencies. We do a forecasting service, and we monitor and report on air quality. We are the lead for one particular type of emergency, which is pollution of waters, but in every other emergency in the framework in Victoria we are very much a support agency. We see our role as very much supporting those on the front line.

Our accountabilities for preparedness really cover three broad areas: networks and forums, role clarity and improved community information. What do we mean by 'networks and forums'? We are a very active participant in a range of statewide and local networks which are about building knowledge, sharing knowledge and working together. We attend and we give preseason briefings across the agencies so that they understand the likelihood of risk and the impacts of smoke during the fire season. We are there to provide advice and expertise through our principal expert network within the EPA.

Role clarity is something which is really important across the emergency services. There has been an awful lot of work done in recent times about role clarity. We now have much more articulate, prescribed standard operating procedures, which we are happy to share and which are publicly available. They are very important in spelling out what is the role of the EPA during an event, what is the expectation of the emergency services of the EPA, and through that framework, what is the expectation of the community from the EPA — what are the types of services, what is our capability and how do we respond.

Improving community information: we have put an awful lot of effort into this. This is about improving access and understanding of the data that we gather and making it accessible to the community as best we can. We also do an awful lot of work around forecasting and giving advice to the emergency services. Another large part of our accountability during preparedness is actively taking part in exercises and testing of the protocols. By way of example, there is a large exercise into a complex-type event planned for the Latrobe Valley, and the EPA actively participates in this. This is about making sure that we test our protocols and importantly that the incident controllers and other members of the emergency services family understand our role and know what to expect from us during an event.

Our accountabilities during a response: like I said, we are a support agency in fires. If I just run through some of the accountabilities that we do, we do environmental and community risk impact advice; we do air quality forecasting and alerts — and that can be scaled up or scaled down, depending on the size of the event — we do

smoke impact assessments; we do incident air monitoring, which is a new capability; we do live air monitoring of the data; and we provide advice to other players, such as the chief health officer and the emergency management commissioner or the on-site incident controller. We work with others to interpret the data and to try to predict what is going to happen in a longer term event, and we work on messaging through to the community through the agreed protocols.

By way of example, to try to understand what we need to be ready for in this coming fire season we of course look back at the previous season to see the type and range of events that we have been involved in. There has been a number of significant industrial fires of late. There was a fire in November in Somerton and one in January at Broadmeadows. Both of those instances allowed us to test some of our newer protocols, and working with others we have taken the lessons and the learnings from them to improve those protocols and our ability to respond. The fire in Somerton was the first time we deployed our new incident response techniques and equipment, and that proved very useful to both the incident controller and indeed the community about giving them confidence.

By way of testing that, there was also a fire in Strathdownie, right over in — I will get my geography right — the west of Victoria. Myself, the chief health officer and the emergency management commissioner visited that event to see how the new protocols would work through on that. So we continually test and apply our protocols to make sure that things are working. With that, I am mindful of the time and I will hand over to Ant, who will go through some of the systems that we have in place.

**Dr BOXSHALL** — We thought it might be useful for the committee to step back a bit and have a look at the general air monitoring capability in Victoria. We effectively use four different types of monitors, and you can see the four of them there. There are general conditions around: what is the ambient air quality like? There are local conditions, so if there is a pollution event, there is some air monitoring put there, and then there is the incident response — there is an actual kind of emergency: what do we do? Then, of course, there is the next layer, which is a growing layer for us, which is citizen science. We are running a pilot at the moment in the Latrobe Valley in particular around that.

Those different types of equipment then fit into a network, and the very small map in the top corner, which you also have a copy of, shows that that network has been predominantly set, on a historical basis, around where the biggest population and the biggest pollution load is, where they interact. That is Melbourne, Geelong and the Latrobe Valley, and as we start to pre-position our incident air monitoring around the state, we will start to see more regional centres represented there.

What this capability growth is is essentially a story of us moving through and building this capability, since Hazelwood in particular. We almost had a small capability — more of a legacy capability, based on the network — prior to Hazelwood, and particularly we have had always had a role in forecasting air quality. Since the Hazelwood mine fire there has been a great deal of investment in building the statewide capability, and you can see that stepping up as we move towards 1 October — or this summer's fire season. That will be the first full deployment of the full capability, and then we will be testing that.

The important thing I think is that, according to the aims and the protocols, what this capability is for is significant and persistent smoke events that impact community. That is when this is deployed; we get called upon to deploy in that circumstance. And just underlining that growth of equipment over time, you can see pre-December 2015 a very small capability.

On the right-hand side, I should say, are the different types of things that we monitor. There are all kinds of, different types of, things. Some are gases, and there are webcams to look at smoke et cetera and data delivery systems. On the left-hand side is just the number of equipment. Those stack bars show an increase over time. In time for last summer we were able to effectively respond to a big event — a Hazelwood-style event, or a slightly smaller one with a persistent significant impact. By last summer we were able to do that with the new equipment. By this summer we will be able to do that to two larger scale or complex events. Then we will finish off with a little bit more extra equipment by the summer afterwards. It shows that growth in capability.

Then in terms of what we do with this information, we make it available to the community. One of the things that we heard strongly out of the Hazelwood inquiries was that the community did not have access to the information they wanted when they wanted it. So another avenue of better preparedness we have had is changing the way we present this information. One of those has been an investment in a new website display

called AirWatch. That is constantly updating as we add new equipment and as we add new feedback from the community and other agencies about what works and does not work. We evolve this site over time, and that integrates with the messaging from the health authorities and connects through to VicEmergency messages. So if an emergency were to occur and a particular one of those dots went a red colour to say that we had hit a particular health level, then there would be a message on there directing people to [emergency.vic.gov.au](http://emergency.vic.gov.au) for further information, because in those circumstances it is likely that the air quality is not the biggest threat to that community at the time, and it may be a fire or otherwise that they need to get other information about. That is where we are trying to improve that community information.

**Mr FINEGAN** — The slides are really just a quick run through of the capability, and what we are trying to give a sense of is an increasing and growing capability. This slide finishes with the title ‘All communities all emergencies’, and we see ourselves as very much an integrated part of the emergency management framework within Victoria. We have very good networks across the system, and we are in constant conversation with colleagues. The two reports represented there are the Hazelwood mine fire inquiry reports and indeed the review of the EPA. So the government has conducted an independent review of the EPA. That report was made public. with 48 recommendations on 31 March and is currently being considered by government. It talks further about our role in emergency management and indeed our role more broadly. I will leave it at that, Chair, thank you.

**The CHAIR** — I have a raft of questions. I might just pick up one phrase that was used, about the responsibilities of the EPA prior to Hazelwood and the capacities that you had for monitoring then. I do not think the word ‘legacy’ — if I can be blunt, and you may have a different view — is quite correct. I think the EPA had responsibilities for monitoring prior. You might say that you had insufficient capacity, and I know rather more about it than — —

**Mr FINEGAN** — I think it was a use of a word not intended to imply old equipment.

**Dr BOXSHALL** — Legacy equipment rather than a legacy responsibility.

**The CHAIR** — Well, you had responsibility — —

**Ms SHING** — That is the witnesses’ evidence, Chair.

**The CHAIR** — Yes, but I note the witnesses are actually I think in part accepting my point that those responsibilities were not legacy responsibilities. The other point I am interested in is the standards for your website and the forecasting. These are national standards that are obtained or they are worked at a particular time. How does that operate, and is there a similar capacity in other states?

**Mr FINEGAN** — If I give a quick broader introduction, then Anthony can follow up with some of the details on the particular measurements for the various protocols. When we describe the four basic systems we use for monitoring air, the ambient air monitoring is done to a national standard. That is about meeting our reporting obligations about the NEPM, the national environmental protection standards for our air quality, and we have been doing that for 30-plus years. That is to a very agreed standard, and that is consistent right across Australia.

When we get into incident response and some of the new capabilities, they are about measuring component parts of smoke — smoke particles themselves — and other elements as our capability increases. Other things that we use are some old things such as visual distance. So there are some measures that we can use to give general advice about how far you can see, which is a mix of the old, almost the farmer’s method, and the scientific method and it is bringing the two together. Anthony, do you want to expand?

**Dr BOXSHALL** — I would only add that most of the long-term national standards around air quality have been based around what I would describe as ambient air quality: this is what I breathe over a year. And then as you are exposed to that over a year, if you breathe those things in the air, this has an impact on you. Most of the standards that are required in an emergency event are more related to: what am I breathing right now, and does it have an effect on me, at what level now? They come more under the national health standards than they do under the natural environment standards and that is why we work very closely with DHHS and the experts in DHHS, to understand where those trigger levels are. DHHS are responsible for setting those and they guide us.

So the map I referred to in referring to a trigger level, those trigger levels are set by DHHS on the best available health information particularly related to breathing this now for this period of time.

**The CHAIR** — So what might be helpful for the committee is a list of all of those items that you measure; the basis of the standard, national or otherwise; and also an indication as to what other states do on that. That would be helpful to the committee. Some of these relate directly to bushfires and others to other types of fires as well, but it would be helpful to have that list of what is measured, the regularity of the measurement, what is there with response and also the basis of the particular standards that Dr Boxshall has referred to.

**Mr FINEGAN** — We will get back to the committee with that one. One document I would mention at this time, Chair, is the *Community smoke, air quality and health standard*, which is a joint document between ourselves and the department of health, to give the committee some comfort that a lot of that work has been done and there are protocols in place which set both the standard and the expectation about what is measured during an event, whether it be a bushfire event with bushfire smoke —

**The CHAIR** — Some other fire.

**Mr FINEGAN** — and some other fire, a more industrial-type fire in which there may be other concerns about what is in the smoke.

**The CHAIR** — So that table that lays that out and gives us some idea of what the other states do would be useful as well.

**Ms SHING** — Thanks, gentlemen, for your initial evidence and also for the presentation and for answering questions. I would like to talk a little more about the interrelatedness between the EPA on the one hand, the department on the other and the accountabilities that you refer to at page 2 of your presentation, in particular the networks and forums, so the working groups and the committees that you are part of and that you lead or are involved in, but also how the EPA has traditionally related to other departments beyond just health and what scope there is for the EPA coming off the back of the review, which obviously the government is still considering, to actually become more actively embedded in decision-making from a preventative perspective as well as monitoring ongoing ambient issues but emergency response as well. There is a lot in that but I am actually aiming to extract quite a fair degree of information, particularly given that the terms of reference talk about the relevant administrative and organisational structures in place and the way in which they serve the ends of being prepared and being responsive or not.

**Mr FINEGAN** — Just for clarity, the EPA is an administrative office and we sit under the DELWP portfolio, so we are very much supported by DELWP through the need for resources and staff and funding during an event. There is an agreed MOU between myself and the secretary of the department, so we are very much supported and feel empowered to get on and do our job. In another sense as well, we are the independent environmental regulator across the state and through our daily work in enforcing and getting compliance with the Environment Protection Act we do an awful lot of work which touches on preparation and preparedness for events and avoiding them in the first instance.

We are very much tied in with the Emergency Management Victoria organisation and the emergency management commissioner, Craig Lapsley, is very inclusive and ensures that we are at the right committees and invited. We are completely tied in through the communications group in through emergency management. We are completely tied in at the chief officer level. For example, I attend regular meetings with chief officers across the emergency services, the broadest family of emergency services, which includes health all the way through to the more traditional front-of-mind ones, such as the ambulance and fire services. An awful lot of effort is put into building those relationships so that when things get difficult for the community we know who is who in the zoo, but importantly we understand our roles.

We have agreed protocols. There is a series of protocols around the EPA's role within emergency management, particularly in fire, where we touch upon our relationship with health and our relationship with the community and with Emergency Management Victoria and the fire services. All those protocols have multiple signatures on the front. There is myself, Craig Lapsley and the heads of the fire services and the chief health officer. The journey we have been on over the last couple of years has been really about reinforcing and making those relationships better and putting the protocols in place.

You asked about the review of the EPA. It has made 48 recommendations which the government is considering and we await the response to that. But the flavour of the inquiry report fairly places the EPA as not just an environmental regulator but an environmental and health-type organisation. There are recommendations there which are about bringing the environmental health function, Department of Health and the EPA closer together to make sure that we are working as seamlessly as we can. The document goes as far as to show direct relationships between my role and the deputy secretary's role in health, the new chief environmental scientist within the EPA working with and to support the chief health officer. These in my view — if it is not improper to speak before the government's consideration of those announcements — point in the direction of health and the EPA working more closely together for the benefit of the community. I could probably talk for a long time, but I do not know if I am addressing your question.

**Ms SHING** — That is a good overview. Thank you very much for those comments, which set, I suppose, the scope of challenges, but also opportunities that the EPA has in managing those different responsibilities.

Moving to the specifics now and to Hazelwood, one of the things which, as was indicated in the opening presentation, has come out of the inquiry is the need to engage with community and to understand how the community was faring during that very, very difficult period. For the two of us from Gippsland on this committee we know it was an exceptionally testing and traumatic time for people and information was very key to that. That was borne out in the course of the inquiry. How does the EPA propose to take the lessons learnt from Hazelwood and improve them in an operational and administrative sense?

**Mr FINEGAN** — The element of our work around citizen science is a very important way of engaging with the community, and what we are trying to do is break down the mystique around what is the science and make the science penetrable and understandable for people without diluting the standard of that science. I believe we lost the trust of the community at Hazelwood and we have been putting great efforts into rebuilding that trust.

If I just reflect upon some of the things which have happened in the almost two years that I have been in the job, we tried to make our information more accessible through our website but the website was fragile and it gave out some incorrect messages and some of the equipment fell over. That further eroded trust. So how do we work with community to understand what they want to hear from us and make sure that we are giving them that information and a degree of understanding around that information, but making sure that the systems that we have in place are robust, that there is a degree of redundancy around them and indeed that they are working at all times under stressed conditions — —

**Ms SHING** — And in a timely fashion as well, which I think is one of the things that was borne out from reporting and notifications.

**Mr FINEGAN** — Timeliness of advice is a key issue. We gather data all the time; it streams to us. Many of the measures are 24-hour measures, so is it right and proper to give that information out to the community? What does it mean? Just working those through and having the conversations with community. Following the Hazelwood mine fire inquiry the Premier announced a significant increase in funding. You were present at the announcement.

**Ms SHING** — I was, yes.

**Mr FINEGAN** — That for us is a really important vehicle. It allows us to recalibrate both the expectation and our ability to deliver information to that community in particular, but also use that for a model for the rest of Victoria. It is not, as good as our scientists are, for the scientists to go off to into a back room and design the best solutions alone. It is our scientists sitting down with the community and explaining their thinking, listening to the community, understanding their want and then working that through.

If I could give one quick example of where I had one of those road to Damascus-type moments. At the Somerton fire, which was the first time we deployed our new smoke track equipment, we were out measuring and the technical advice was: 'There is no smoke impact in this area; we can stop measuring'. But we took a decision to continue measuring because I sometimes think that measuring the absence of a pollutant gives the community confidence. It is about doing what we think is needed for both community confidence and indeed for the decision makers, whether it is the incident controller or the chief health officer or others. Sometimes those two are slightly different. What is needed for the decision-maker can be very specific, detailed

information, which is not necessarily the information the community wants to hear, and it is about making sure we address both.

**Ms SHING** — Yes. Thank you. Mr Wells, you look like you want to say something?

**Mr WELLS** — I was just going to add at the next level down, at officer level, in terms of what is happening operationally, obviously pre Hazelwood versus post Hazelwood is a key marker for us. Obviously post Hazelwood there has been a new service standard adopted, which is around a 24-hour response —

**Ms SHING** — Across the board.

**Mr WELLS** — once we get a request from an incident controller to deploy. So at operational levels there has been a huge amount of effort put into developing those protocols jointly across all the agencies. Incident controllers are properly briefed so that everybody understands their role, the expectations, how the data flows, the timeliness. Obviously that has fed into other reforms internally at EPA around our appendix to our EBA, to facilitate appropriate rostering — all of this sort of micro-level detail stuff which underpins the implementation of a new mode. As Dr Boxshall showed on the time line, there is a bit more work to go in that; we are on a journey. But certainly last season those five or six events that Nial mentioned were successfully deployed and monitored. Probably the other key thing that happens behind the scenes is the air forecasting that is run out of Anthony's group as well, which gives a really good insight into things like the Tasmanian smoke that came across last year. That gave us a heads up on those sorts of things.

**Ms SHING** — Great. Thank you very much, gentlemen. That is very useful.

**Ms TIERNEY** — Can you give us more information about the new air monitoring equipment and how it differs from what you had before?

**Mr FINEGAN** — Yes. Anthony, I think you would probably be better at answering that.

**Dr BOXSHALL** — Sure. There are two levels to do that. The equipment we had before was more based around our long-term role about reporting on ambient air quality over decades. It was designed so that when you collect a dataset over a year you could miss a couple of data points in the middle of the night one night and it would not be such a big issue; you would have the data stream flowing by the next morning and so you have got a data point for that day. So the equipment and the system backend was designed to do that.

One other important point about the equipment too is that because the national standards have in many cases very precise Australian standards for the type of gear, it is literally hardwired. You need this particular type of equipment to measure this particular parameter and many of those are derived from international US EPA standards and others. So that is effectively the network as it was designed over time.

What the incident response capability or purpose requires is a different type of backend. So if the data disappears for half an hour, that can be crucial; you cannot have that happening, and so we have had to redesign that backend but also we are detecting things faster. A very concrete example is that one of the Australian standard pieces of equipment that measures some of the small particles takes 24 to 36 hours to warm up effectively. You cannot do that in an emergency; you need to be able to get some indication of what the particle levels are within an hour, and so the kind of equipment we have bought for that actually does that.

We then have an impact, 'Well, that's actually not the national standard for measuring that type of thing', so then we go back, and we are working with equipment suppliers and others to cross-calibrate those different types of equipment against the national standards. So you end up with a different set of equipment — physically different boxes — that measure pretty much the same things, but we have had to do a bit of science at the back end to say, 'Right, this one is like this piece of national standard equipment', so therefore we can give comfort to decision-makers, particularly to the department of health, that may have to make calls about the potential impacts on communities. Is that a useful summary?

**Ms TIERNEY** — Yes, and where you finished, can you provide some very clear, concrete, real examples of how that swiftness of information does benefit in the decision-making process?

**Dr BOXSHALL** — From a science end, I can, and then I will probably pass over to my colleagues at the emergency response end. From a science end, the benefit we have to be able to give the decision-maker the

information is that when we have got this stuff online — and when I say online, I mean coming into our system; it may not physically be on our website yet; that is a second thing — when it is coming into our system online for us, we are getting phone calls from incident controllers or other science officers for other agencies saying, ‘What information do you have in this part of a suburb?’, for example, and then we will be able to immediately say, ‘Well, the particles are peaking at this level, and that is below the trigger level’, for example.

Then what we do according to the protocols is produce a report as fast as we can. We have templated reports — one of those joint standard operating procedures that Nial held up before. My scientists will fill one in and be able to give the health department decision-makers, in particular the CHO — the chief health officer — if it needs to go to there, our best estimate, based on the available data, of what the impact on community is. And that has actually happened in real life a couple of times in some of the incidents we have had.

From a decision-maker’s perspective, I will hand over to one of my colleagues about what that means in terms of decision-making.

**Mr FINEGAN** — There is one very clear example of how the new equipment delivers the community benefit, because first it was mobile — the display was visible, i.e., we could show somebody a screen and explain it to them. During the Somerton fire there was a concern amongst some of the train drivers and the people who worked around the marshalling of the trains on the Broadmeadows line up past Craigieburn. Am I getting my geography right?

**Dr BOXSHALL** — Broadmeadows; right.

**Mr FINEGAN** — Broadmeadows. There was a concern that the area was being impacted by smoke and there was an OHS concern about whether it was safe for people to get in and work on the trains. We were able to deploy our equipment that was in the area over there to measure the area and to show those who were concerned that there was no concern in the air, which allowed those people to go to work. If we had not been able to give that comfort, the consequence could have been trains not in the right place, which would have impacted on the suburban rail network more broadly. They are the types of avoidances that we have seen which do not probably get an awful lot of light.

In the past in that same instance we would have probably tried to explain to somebody that there was no impact and people would have gone, ‘Well, how do I know there is no impact? I have to trust you’, and when trust was not there, we were able to deploy a piece of equipment. I think it is that ability to deploy — and that is a particular section of the community — —

If any section of the community around an event were concerned we can deploy equipment quite quickly, measure that and give them comfort around the impacts on their time.

The comment about the legacy question, I think in Anthony’s answer there he was trying to expand on that. The network we had down in the Latrobe Valley before the Hazelwood fire — —

**The CHAIR** — Statewide.

**Mr FINEGAN** — Statewide, but it was there as part of the ambient air monitoring, so it was very scientific laboratory-based type equipment. Because of the Latrobe Valley we had that equipment there for the reasons of the industry down there. No surprise, that is where the fire was, because of the open-cast mine, so it was a happy coincidence of that equipment being there. If you think about the Strathdownie fire, which was a bog peat fire over in the other side of the state where there is no industry around it, we do not have any ambient equipment out there, which is that laboratory. If we were to deploy that equipment there, by the time we got it out there, set it up and calibrated it to the standards, the event might have passed, whereas with the new equipment we can go out there. It is a bit rougher for want of a better word; it is appropriate and it meets the need, but it does not meet the laboratory gold-plate standard that we have for the ambient network, by way of description between the two.

**Mr WELLS** — If I may just add from an operational perspective — have we got time, Chair?

**The CHAIR** — We have got three more questions.



**Mr WELLS** — Just in answer directly to that question, for example, with some of the industrial fires, initially you may have remembered those images of the smoke going past the Eureka Tower from the Broadmeadows fire in that where you have got this high-intensity burn and the plume is going straight up and is not posing a direct risk to the community in close proximity, we can have information to support the view that there is not risk to the community, but as you get on top of some of these fires and they start smouldering, the smoke can drop down on the nearby community so you can then change your information so then information can flow to the chief health officer, who can consider decisions.

Obviously evacuating is a big decision for the chief health officer given what can happen to vulnerable people in that situation. It can go, ‘Okay, there’s a small spike here, but if people close their windows and doors that’ll be sufficient, because we can see that this won’t be prolonged’, so you do not expose vulnerable people to an unnecessary move. They are the sorts of practicalities that I think this equipment can assist with.

**Mr BARBER** — Assuming you gather that data, do you then put it straight onto the internet or do you give it to the chief health officer and let them decide what to tell the community about what they should do?

**Mr FINEGAN** — During an incident there are protocols around the data flow. Primarily our role is to inform the incident controller so that they can manage the incident and reduce the greater risk to the community. We also aim to make that information available to the community with the appropriate messaging around so that the community can understand it. If you think about the Somerton and Broadmeadows fire, after the event we released the information that we had with a full analysis and description around what was measured during that event. So we do it at three levels — we do it during the event, after the event and particularly to the incident controller.

**Dr BOXSHALL** — If I may just add to that too, as Nial points out the primary goal is obtaining information for decision-makers. But clearly the community can already, with our network and what is on there, have a look at it. If it is being picked up by the ambient network, it will be displayed, and that has the triggers.

Currently the AirWatch website cannot plug and play so to speak with the incident air-monitoring equipment, but that will be changing by this summer. So when new incident equipment plugs in it will just display immediately.

**Mr BARBER** — It will display straightaway.

**Dr BOXSHALL** — A new icon will pop up and it will show.

**Mr BARBER** — And in any case I can just look straight across the valley, and if I cannot see the other side 10 kilometres away, I could pretty much tell you without any of your fancy devices.

**Dr BOXSHALL** — Yes, as you point out, that is absolutely true. And part of the citizen science program in the valley is actually a thing called smoke spotters, which is actually helping people to calibrate that distance so that they can get a sense of what that means for their own health.

**Mr BARBER** — So we know the acute effects of this high-level exposure on vulnerable groups in an hour, and it keeps getting worse over 24 hours and then over 48 hours. We have got a fair bit of research on that. A lot more is being done as we speak, so my question then is: if the information goes straight on the internet, which is in raw form — you know PM<sub>2.5</sub> or whatever it is going to be — and at the same time that information is being fed to the incident controller and/or the chief health officer, will the public only get specific information when it forms part of an emergency warning, one of those little dots on the map? Is that how it will work?

**Dr BOXSHALL** — In that AirWatch scenario that you describe anybody logging into that site will see the data. They will actually see the raw data. I wish I had been able to show you one, but obviously the raw data, you know the little kind of bar and it shows the actual data and has the numbers. And then what is important is that there is also the predetermined health messages that trigger levels, so obviously there is the raw data and the health message. In market research we have done with people asking them about science communication, we find that some people want the data, some people want literally the information, which is the message.

**Mr BARBER** — ‘Tell me what to do’.

**Dr BOXSHALL** — And some people just want an alert: ‘Tell me when it’s bad’. And so we try to gather all three of those needs, I suppose, and present it. It makes a complex kind of visual, but we have had good feedback around it so far.

**Mr FINEGAN** — And again there are SOPs and there are agreements around the wording, the types of message and who is the voice of that message during an event. Particularly for this inquiry I think all this work is done in the cold season. That work is being done now. The agreements and the understanding about who says what, when, and what triggers an automated message on the website and what triggers the chief health officer standing in front of a television camera talking to the community more broadly — all that work is agreed up front, so that there is no discussion or argument during an event.

**Mr WELLS** — And certainly something that is maturing among all the agencies, including in response to bushfire but also with planned burns, is being much more explicit around the idea that the fire might be the controlled burn or the fire might be in north-east Victoria, but there might be smoke impacts felt elsewhere or vice versa. So the consequence of the smoke could be hundreds of kilometres from the source of the smoke, and getting a bit more sophisticated with the FireReady app signals and those sorts of things. So we have been working on that with the relevant agencies as well.

**Mr FINEGAN** — In this space I think our forecasting ability is really, really important. There is the live measurement of what is happening at this moment. If we can predict what is likely to happen, we can give advice which might mean a planned burn is delayed, and that has happened in the past. The burns can be scheduled differently about wind movements, but importantly as you said the community is not homogeneous. There are different groups of people within the community who have different personal responses to the smoke, the length of smoke — pregnant women, young children, people with asthma, for example. If we can give them more advice about what is likely to happen if the event cannot be postponed or delayed, if this is happening, they can then take some control and be able to live their lives. I think they were some of the lessons from Hazelwood. People want to have this information so that they can make their own informed decisions.

So live streaming information is one element. That is about openness and transparency — what we have, you can have. That might be of great interest if you are Anthony Boxshall and you can make sense of it, but for the vast majority of the community they want somebody to interpret that information and give them advice. As we sort of think and look to the future where we really would like to be is in a place where we can talk about dosage, so it is not about exposure. You get into what does it mean for you. Mr Barber, you are out running in this smoke: is that the same as me sitting reading a newspaper in a chair? Clearly there is a difference in dosage there, but we are being exposed to the same air. That is where we are moving to.

Now that is a number of years away, but on that journey it is very important that we bring the community with us so that first and foremost we — we being the broader emergency management community, because we work as one on this stuff — become a trusted voice and a trusted source of information, and that is the key to it. When people trust the information that we can give them, they can then interpret it for themselves and more importantly take the advice that we collectively give them. That trust is not just taken for granted; that has to be earned and won, and repeatedly won through the professionalism of the efforts that we put into it.

**Mr BARBER** — I will just let you know that there is a permanent New South Wales EPA station in Albury.

**Mr FINEGAN** — Yes.

**Mr BARBER** — Which is a pretty good proxy for what is happening in Wodonga and the north-east, so maybe you could look at modelling —

**The CHAIR** — Share some data.

**Mr BARBER** — the effect of stubble burning on top of fuel reduction burning on top of logging coupe burning in the north-east in autumn.

**Mr FINEGAN** — When we had burning up in that part of the state last year we deployed our own equipment up there, so we have our own capability. One of the things we do through what is called the heads of EPA right across Australia is — again taking lessons from Hazelwood — building a much stronger network of information sharing and capability sharing. We use a piece of equipment in Victoria called smoke track. Where

we were first exposed to smoke track was through our colleagues in Tasmania. Indeed during the Hazelwood fire the Tasmanians came over and supported us. I mentioned in the slides our principal expert framework, so our scientists and our experts in the EPA are connected across jurisdictions into these networks. So that is a very good point, and we can follow that up.

**Mr YOUNG** — Cheers, guys. What I want to talk about is prediction methods, because obviously planned burns are that — they are planned — and hopefully everything goes to plan in most cases. But it is a very stringent process to get to a point where we can have a planned burn. Mr Finegan, you already touched on your ability to predict and foresee where things are going to go. How good is the science behind that? Do we have enough datasets that are accurate enough to be able to predict or can we relate datasets from certain situations to planned burns that could be very relative? Are we anywhere near being able to come close to a good prediction on that sort of thing?

**Mr FINEGAN** — I will give a very quick introduction and then I will hand over to Anthony, who will be across the details. Through the ambient air monitoring network that we have in Victoria, particularly around Port Phillip Bay, we have a very good understanding of the aggregate weather movement and the patterns, and then when that is plugged in with the more up-to-date information we get from BOM we can do both local and broad area forecasting, and that can be updated very quickly in an event. Anthony, do you want to go into some of the detail behind that and how we deploy our forecasters and how we work through forecasting on a day-to-day incident basis?

**Dr BOXSHALL** — In particular in a planned burn scenario most of that predictive work is done in DELWP, and then they will tap into our methods and our current predictions and forecasts as well.

The ability to predict where smoke will go fundamentally, as I understand it, depends on three things — weather predominantly. So if the BOM, the Bureau of Meteorology, is getting it right, then we can follow that; that is really essential. As we all know they are very good at forecasting. Then what happens is the localness of the resolution, for want of a better term. If you have got smoke in a valley, then you need to understand the local weather conditions for that. Then there is smoke behaviour. The understanding of smoke behaviour has advanced enormously in recent years — what is in smoke and how it behaves. As I understand it, the different elements that can affect humans do behave differently. So if there is a growth in knowledge that is required, it is more in the smoke behaviour than it is in the local weather and the general forecasting.

The methods and algorithms for forecasting are really advanced. I suspect if I asked the scientists in that area, they would say we could always have a better model. But really it is pretty advanced stuff. We do back testing of our forecasts — our general ambient Melbourne air quality forecasts. It runs pretty much in line, unsurprisingly, with the weather forecast, because that is its primary driver. So when the weather forecasters have got it, standard events are occurring. Hopefully that is helpful to explain that.

**Mr YOUNG** — Yes, that is fantastic. Just in regard to DELWP doing most of the work on the predictions and tapping into what you guys do, as far as that do you actually give a formal submission to them on any of their planned burns in that sense?

**Dr BOXSHALL** — We do when they ask us specifically. We put out a twice-daily forecast and then we can localise that, and they will often ask us for localised information on a localised area particularly if we have got stations nearby that are measuring because we can give more information about what is available.

**Mr WELLS** — Probably just one example of the forecasting. I have only been at the EPA for about 18 months but I have been just amazed at the accuracy of the forecasting. On the Wye River fire daily forecasting, the feedback we got from the incident controllers was that it was extremely accurate and extremely useful and we actually did not need to deploy a lot of our monitoring gear because the forecasting was so accurate and it was very clear. Obviously there were the benefits of a coastal location but nonetheless good feedback from the incident controllers about the accuracy.

**Ms BATH** — I think Mr Young touched on a point that I wanted to raise, but DELWP under its new model is looking at a Safer Together risk management preventative burns strategy. My interest is in your advisory role, which I think you touched on briefly, in relation to planned burns, targeting planned burns, where, how, some of the science behind that and how you liaise. Would you contact them? It sounds like they would ask you. I am looking specifically at localised targeted burns. We have talked about community confidence. In many respects

my opinion would be that if we do not have any prescribed planned burns, then the community loses confidence as well. 'It is a good day; why aren't they doing something?'. So could you talk to me a little bit about that relationship?

**Mr WELLS** — I think probably the first bit of context to answer the question is on slide 6, where Anthony presented the idea about incident air monitoring capabilities about significant and persistent smoke events. Most controlled or planned burns are not significant, persistent events. A lot of them might be 24 hours or 36 hours and then there is some blacking out. They are not generally the target for our incident air. I think the practical complexity in the sense of all the different moving parts that need to be considered before, as Mr Young mentioned, a planned burn is commenced — there are so many complexities and to be too cute, for want of a better term, about the forecasting aspect may be something that needs to be developed through time.

The key challenge of course is that as we get more targeted to protecting key risks to settlement you are going to be burning obviously close to people. It is just that balance as you outlined in framing the question. That will be something that just has to be grappled with on a burn-by-burn basis.

I live in central Victoria and the work that DELWP did on a burn near my place — there were a lot of letters. You were walking the dog and there were notices on the trees telling you that there was a planned burn coming, that it would be based on conditions. They did mobile signage saying, 'Planned burn tomorrow'. There is some pretty good local communications happening around some of this, so I think partly that is as much as can be practically done as well. I think we want to avoid giving a false sense of precision around what we can do.

**Ms BATH** — Surety or something.

**Mr WELLS** — Yes.

**Mr TWIDALE** — Would you like me to add to that?

**Ms BATH** — Please do. It is good to hear from you.

**Mr TWIDALE** — I have some examples from last season as well. Through the last season DELWP did their own prediction and modelling, and their own risk assessment process around what fires would be burnt when et cetera. Normally our forecaster would attend a weekly meeting with DELWP through the peak burning season just so that they are informed about what is going on and they can also bring some of their forecasting knowledge if it is needed. That is just a regular routine. Where a particular series of burns then starts to combine with what is already in the atmosphere to create particular smoke issues, that is when EPA comes a little bit more to the table through the emergency management arrangements.

In particular in the last season it happened through some smoke you mentioned — Wangaratta — which also then happened in the Latrobe Valley over the same few days, where there was quite persistent smoke sitting around. Where we got involved then was sitting down with scientists from Anthony's group, a forecaster and myself at the state control centre having a look at the predictions, value-adding our own information, discussing whether or not incident air monitoring was required. In the valley it was not, because our ambient network was picking up what was needed, and in Wangaratta we deployed a second station up there as well to get some more information to give to DELWP to help them make their decision around whether or not to continue to light more burns or to let it go from there. That is where it is the regular weekly meetings and then it is the actual lean forward, share information, be at the table as a part of the EM arrangements where we come in.

**Ms BATH** — Thank you. That is good. I have got one more, Chair. It is a segue on from your comments. How is your science improving — if we are look at agricultural industries that are impacted by air quality and if I just choose grape growing, for example — or is your science improving around communications with those groups of people and the impact that planned burns or indeed spontaneous burns would have?

**Mr WELLS** — I think to be candid it is really the role of DELWP to liaise with the relevant sectors in planning the timing. Obviously there will be different times of the year. Obviously if you are doing it just before harvest for grapes it is not great, but if you are doing it in the spring then that is probably more acceptable. I think we would remain pretty silent on that. That is really the role of DELWP to work with the relevant industry groups.

**Ms BATH** — Yes. But would you be able to liaise with farming industries about air quality? I guess they are part of the community so — —

**Mr FINEGAN** — By coincidence, Damian's father grows grapes, so I think his answer underpins that anecdote.

**Ms BATH** — Okay. He is passionate.

**Mr FINEGAN** — DELWP would take the lead on that broader community engagement around planned burns and the like. We engage with the VFF and industry groups more broadly on the role of EPA, and their concerns around smoke have never been raised with us directly. Our scientists are about the air and the impact of the smoke on the air. DELWP have their own capability about understanding DELWP and their colleagues in DEDJTR would be looking at the impacts on fruit and the like.

**The CHAIR** — Thank you. Can I particularly note a couple of documents to come back to the committee and the secretariat will be in contact in the next period. But can I thank the EPA for its evidence today. No doubt we will talk further.

**Mr FINEGAN** — Thank you, Chair.

**Mr TWIDALE** — Thank you, committee.

**Witnesses withdrew.**