



COMMONWEALTH OF AUSTRALIA

Proof Committee Hansard

SENATE

COMMUNITY AFFAIRS REFERENCES COMMITTEE

Impacts on health of air quality in Australia

(Public)

TUESDAY, 16 APRIL 2013

NEWCASTLE

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SENATE

COMMUNITY AFFAIRS REFERENCES COMMITTEE

Tuesday, 16 April 2013

Members in attendance: Senators Di Natale, Rhiannon, Siewert, Stephens.

Terms of Reference for the Inquiry:

To inquire into and report on:

The impacts on health of air quality in Australia, including:

- (a) particulate matter, its sources and effects;
- (b) those populations most at risk and the causes that put those populations at risk;
- (c) the standards, monitoring and regulation of air quality at all levels of government; and
- (d) any other related matters.

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RILEY, Mr Matthew Lance, Director, Climate and Atmospheric Science, New South Wales Office of Environment and Heritage

SMITH, Professor Wayne, Director, Environmental Health Branch, Department of Health, New South Wales

Committee met at 09:29

CHAIR (Senator Siewert): The committee will commence this hearing into the impacts on health of air quality in Australia. I will firstly deal with the formalities. Committee proceedings are protected by parliamentary privilege. It is unlawful for anyone to threaten or disadvantage a witness on account of evidence given to a committee, and such action may be treated by the Senate as a contempt. It is also a contempt to give false or misleading evidence to a committee.

The committee prefers all evidence to be given in public, but under the Senate's resolutions witnesses have the right to request to be heard in a private session. It is important that witnesses give the committee notice if they intend to ask to give evidence in camera. If a witness today does wish to present evidence in camera or in private, could they please bring that to the attention of the secretariat as soon as possible. If a witness objects to answering a question, that witness should state the ground upon which the objection is taken and the committee will determine whether it will insist on answer, having regard to the ground which is claimed. If the committee determines that it will insist on an answer, a witness may request to give that evidence in camera. Such a request may, of course, also be made at any other time.

I remind witnesses that the Senate has resolved that an officer of a department of the Commonwealth or of a state shall not be asked to give opinions on matters of policy and shall be given reasonable opportunity to refer questions asked of the officer to superior officers or to a minister. This resolution prohibits only questions asking for opinions on matters of policy and does not preclude questions asking for an explanation of policies or factual questions about when and how policies are adopted.

The audio of this public hearing is being broadcast via the internet. I understand there are people in the audience who wish to take photos, and I am required to ask the permission of our witnesses and audience members. We all have to be comfortable, so I ask if everybody in the room is comfortable with that. Thank you.

I welcome representatives of the New South Wales Environment Protection Authority. I understand information on parliamentary privilege and the protection of witnesses and evidence has been provided to you. Thank you for coming along today. We have your very fulsome submission. I invite you to make an opening statement, after which we will ask you some questions.

Mr Buffier: Thank you for the opportunity to address the committee today. As you indicated, we have provided a detailed submission and, in addition to that, we have provided a response to a submission put in by the Hunter Community Environment Centre, which dealt with some issues around misrepresentation of data. I do not intend to go back over those submissions today. I did want to give you a feel for what we see as the key priorities for the EPA and how we are targeting our actions; in particular, what we are doing in relation to particles and PM2.5. I will work through that fairly quickly.

One of the key things that we do as an EPA is try to base all of our strategies on the best available evidence. We target our strategies, actions and communication on priority issues based on the evidence of environmental and health impacts, with a focus on regions where air quality has become a major concern. I will talk specifically about the Hunter later on.

In terms of overall air quality in New South Wales, it has improved significantly since the 1980s. We have seen a steady decline in the order of 20 to 40 per cent in some of the key pollutants such as ammonia, carbon monoxide, lead and sulphur dioxide as well as the oxides of nitrogen and volatile organic compounds. However, ground-level ozone remains an issue in Sydney and particulate pollution in regional areas exceeds national standards, with the major contributors being fires, industry, coalmining, dust storms and wood heaters. But air quality in New South Wales overall is good when viewed internationally. For the PM2.5 annual average in 2010—which is the World Health Organization analysis—Sydney has a reading of seven; the Lower Hunter has a

reading of 8.2; New York has 13; London has 14; and Paris has 23. We have detailed that in our submission, and I will talk a little bit more in detail later about the Hunter.

To underpin that understanding of what is happening with air quality and our management of air quality, we have the most comprehensive and largest network of air quality monitoring stations in Australia. We have vast amounts of data. All that data is made available in close to real time to the public. There is a huge amount of public accessibility. In fact, we had a workshop here in Newcastle last week to look at how we could make that data into better information for the community. We have huge datasets in terms of the air emissions inventory as well. The amount of data that we have in terms of air quality is phenomenal. What we are trying to do is to massage that into a form that provides useful information. Matt Riley can talk about that in some more detail as we go through the questions later on.

As far as the EPA are concerned, we have been newly established as an independent organisation for a bit over a year now, and air quality is one of our key programs. We provide significant resources to our air quality program—we have a lot of individual initiatives in there—and we have done that because particles, and specifically fine particles, PM2.5, are the pollutants imposing the greatest health and cost burden on the people of New South Wales.

The priority pollution for action in New South Wales is particles, and specifically PM2.5. This reflects the evidence of elevated particle levels and population exposure to them in urban and regional New South Wales, the health benefits from reducing particle emissions, and the availability of practical, cost-effective initiatives to manage particles. Going back over a number of years, there was probably a greater focus on PM10. As our understanding of particles and health impacts has evolved, our focus is now becoming much more strongly on PM2.5.

We report against NEPM standards, which are national standards. New South Wales, in fact, chairs the Air Thematic Oversight Group, which is one of the five environmental priorities for COAG: the National Plan for Clean Air. We are chairing that committee within the SCEW arrangements and putting a lot of resources into it. It is important to understand that air quality standards are set at the national level, and we adopt those as being the standards that we report against. However, having said that, let me go back one step. In that process, you would understand that NEPM provides for an advisory reporting standard to PM2.5. There is no target level set for PM2.5; it is an advisory reporting. But, because of that growing awareness here and internationally that we need to focus on PM2.5, we believe that the NEPM needs to change. Specifically, the New South Wales EPA is strongly of the view that the NEPM reporting standard for PM2.5 should be adopted as a compliance standard. As well as the annual standard, the health evidence also indicates that a daily standard is necessary.

That is the general overview. In terms of where some of our priority areas are, the Hunter Valley is clearly one of those. I will give you a case study on the Hunter, very quickly, so you can understand part of the process that we have gone through. We recognise, along with the community, that impacts of particle pollution on the Hunter region are increasing and are likely to increase further in the absence of any action, because of the expansion of the coalmining industry. Last year we established an interagency task force with representatives from the New South Wales EPA, New South Wales Health—Professor Smith is on that task force—the Department of Planning and Infrastructure and the Department of Trade and Investment, Regional Infrastructure and Services to work together on managing air quality by improving our planning and enforcement activities.

One of the reasons that we did that was, as I said, we could see that, in relation to particle pollution, problems were starting to emerge. That was shown up in our data for 2012 for Muswellbrook, which exceeded the NEPM advisory standard for PM2.5. The level is eight, and Muswellbrook recorded a level of 10. Singleton exceeded the level for PM10, in that it exceeded the daily limit on six days of the year instead of five, which demonstrates what we are already understanding to be the situation.

One of the actions of the task force was to pull together all the details of what we are doing in the upper Hunter and what strategies we have in place. We have provided this with our supplementary response to the Hunter community submission, which is the Upper Hunter Air Particles Action Plan, which details 18 projects or programs which are designed to have an impact on particle pollution in the upper Hunter. It is a cohesive and coordinated program. We provided that so that the community generally could understand what was happening. Not surprisingly, not all of those actions are new. We have received some criticism from people who thought that we were purporting to say that all these are new actions. That is not what the document says. The document says that these are the actions that we are undertaking. As I have said publicly, it would be a sorry state of affairs if we had done nothing in the upper Hunter and that these were in fact 18 new actions, because they are in fact some programs we have in place but we have added to them and enhanced them.

But the really critical issue in the Upper Hunter Air Particles Action Plan is that we have adopted in this the annual advisory reporting standard of eight micrograms per cubic metre for PM2.5. We have adopted that as a firm air quality target for the upper Hunter. This is the first time that any jurisdiction in Australia has adopted that as a target, and that target is the most stringent in the world for PM2.5 annual levels. It is something that we are committed to as an EPA. We are prepared to say publicly that that is what we are trying to achieve and we have set out the actions that we think will help achieve that. Does that mean we will achieve that level in the next 12 months? It is fairly unlikely, but that is the target, because you cannot turn things on and off as quickly as that. But what we need to do—and the actions are specified in here—is look at all the activities that are occurring with mining, now and in the future, and look at what reductions we can achieve in that. We believe that target is achievable.

This is a document which we think has a lot of credibility, and it demonstrates the EPA's commitment to better inform the community about air quality and the actions and projects that we have got in place to improve that. The plan is not static or exhaustive, and we are continuing to build on that as our knowledge increases. There are quite a few projects in there which will improve our level of knowledge about the airshed in the upper Hunter and the contributors to particle pollution. That was as much as I wanted to say in my opening comments—just to set that scene and to give you an indication of what we are doing on the ground in a specific area which obviously has a particle pollution problem. We are happy to take any questions.

CHAIR: Thank you very much.

Senator DI NATALE: This is a really technical area, so I am going to try and put as much of this in lay language as I can. Just to provide a bit of context here, what was in the EPA submission was that, when you look at Sydney, we are actually making some progress, particularly around particulate matter, largely because of regulation around vehicles and industry generally. Is that a fair summary of that?

Mr Buffier: Well, a lot of industry is leaving Sydney, but Sydney is a very diversified economy; it is not a—

Senator DI NATALE: With more population and more vehicles on the road and yet we are making progress in terms of particulate matters?

Mr Buffier: Yes.

Senator DI NATALE: So that is the good news. When you look at the greater metropolitan region area of Sydney, Wollongong and Newcastle the news is not so good.

Mr Buffier: On particles?

Senator DI NATALE: On particles the situation is getting worse. When you look at the situation in the Hunter the situation is getting significantly worse. One thing I want to ask you is this. In your submission you talk about the impact in the greater metropolitan region where you say that PM10 has increased by 20 per cent. Does that include the Sydney data?

Mr Buffier: What page are you referring to?

Senator DI NATALE: It is either page 6 or 11. I have two numbers on mine. It is page 6 of your document.

Ms Crotty: Perhaps I can answer that question.

Senator DI NATALE: Yes.

Ms Crotty: When we talk about the greater metropolitan region we are talking about Sydney, the Illawarra and the Hunter?

Senator DI NATALE: Yes. You have said that the emissions of PM10 are up by 20 per cent. But, given that we have actually seen some improvements in Sydney, the situation in the other regions—the greater metropolitan regions—is obviously significantly worse than 20 per cent because the Sydney figures will drag down the average.

Mr Buffier: Yes. This figure relates to emissions per se as opposed to what a receptor is receiving. So quite clearly with an expansion of coalmining, particularly open-cut coalmining, the emission levels are increasing. We do publish the air emissions inventory, which is where this data has come from.

Senator DI NATALE: I suppose I just want to make the point it is greater than 20 per cent when you factor in what is going on in the regions.

Mr Buffier: Absolutely.

Senator DI NATALE: So it is just a bit of context. In Sydney the biggest source of particulate matter is wood fire smoke and vehicle emissions. So they would probably be the two biggest contributors in Sydney?

Mr Buffier: Yes.

Senator DI NATALE: When we are talking about the Hunter we are talking, in terms of particulate matter, largely about coalmining?

Mr Buffier: We are talking about coalmining in terms of emissions in the Upper Hunter. When you talk about what is happening to a receptor, then you see that that is about a different interpretation being required. So, for example, the ANSTO data at Mayfield, which I think is more than 12 years of data and which is about particle characterisation, would show that in Newcastle the maximum contribution that coal dust could be making to particulate matter BM2.5 is 14 per cent. That is the maximum. That is adding together all the industrial sources and all the soil sources.

Senator DI NATALE: And PM10?

Mr Riley: The Mayfield site measures PM 2.5, not PM10.

Senator DI NATALE: I want to now talk a little bit about this so there is a bit of context. Take the standards. With PM2.5 what we are talking about here are very fine suspended particles made up of a cocktail of different chemicals. Is that fair to say?

Mr Buffier: Yes.

Senator DI NATALE: We know that they have a significant impact on human health. We know that the finer the particle, given the evidence that is emerging, the more significant the impact. But it is fair to say that it does not mean that larger particles like PM10 ones do not have an impact. We understand that smaller particles probably have a more significant impact.

Mr Buffier: Exactly. So we are in complete agreement.

Senator DI NATALE: I want to get back to the point that you are making about the EPA adopting a target of PM2.5. Is that an annual target?

Mr Buffier: Yes.

Senator DI NATALE: Why haven't you adopted a daily total?

Ms Crotty: Under the NEPM there are two advisory reporting standards. One is a daily one and one is an annual one and, as Barry indicated, the New South Wales EPA is very supportive of having those as compliance standards in the NEPM. For the purposes of the target in the Upper Hunter air particles action plan, we wanted to focus on the target which has the strongest association with health impacts and that is the long-term standard.

Senator DI NATALE: But we also know that short-term exposure can have a significant impact as it raises cardiovascular mortality, acute pulmonary disease and so on. So what is the reason for focusing on one and not the other?

Mr Buffier: I cannot quote you the analysis but I think you will find that with the daily targets we were not indicating them as being a problem in the Upper Hunter. It was the annual target that we were hitting and exceeding so that is why we provided that.

Senator DI NATALE: Could you explain that? There is no problem with the dailies?

Mr Buffier: The daily ones were below the reporting level by and large and so were not indicating that the daily level was a problem, but the annual average one was.

Senator DI NATALE: This is based on monitoring?

Mr Riley: Monitoring in the Upper Hunter Air Quality Monitoring Network in 2012 showed that annual average PM10 concentrations in Muswellbrook were around 10 micrograms per cubic metre and, in Singleton, around eight. In Muswellbrook it was two micrograms per cubic metre above the advisory reporting standard. However, the daily average PM2.5 for 2012 in the region was much lower, and we had no instances exceeding the daily PM2.5 standard at the population centres.

Senator DI NATALE: You are excluding smaller population centres there, aren't you?

Mr Riley: Yes.

Senator DI NATALE: So what about exceeding in those communities?

Mr Riley: We only record PM2.5 at three monitoring locations in the Upper Hunter: Muswellbrook, Singleton and Camberwell.

Senator DI NATALE: Yes, but we also have data from a number of other communities, don't we?

Mr Riley: PM10 data, not PM2.5.

Senator DI NATALE: Just PM10 data. Okay. And we know that there have been a significant number of exceedences of PM10 data in those communities?

Mr Riley: No. When we speak about exceedences of the NEPM, we have to be very clear. To be able to comment that the monitoring data or monitoring data has exceeded the NEPM, it needs to be meet a number of requirements. It has to be collected—

Senator DI NATALE: Yes. So a standardised set of tests need to be done to be able to make that statement.

Mr Riley: Yes.

Senator DI NATALE: What you are saying is that we cannot draw any conclusions because we not got a standard protocol for this information, you followed up what is, at least at first blush, us putting out more pollution than what we think is an acceptable limit. You are saying that the way the tests were done was not to a specified protocol. What have you done to make sure that that is not the issue? How have you followed up on that?

Mr Riley: To clarify there: the New South Wales Office of Environment and Heritage monitors, in accordance with Australian standard methods, PM10 and PM2.5, so the data collected at all the monitoring locations within the Upper Hunter network are recorded with Australian standard methods. Not only that, they are recorded at monitoring stations that adhere to their own standards. The point that we are discussing is whether or not the data collected at those stations can be compared to the NEPM standard. Only at the large population centres is that the case. That does not mean that the data collected at the other—

Senator DI NATALE: This is a really important point here. Why can't it be compared to the NEPM standard?

Mr Riley: You can compare the value of the data collected but cannot make statements such as that the data exceeded the standard.

Senator DI NATALE: So the NEPM standard essentially says we have a target and the target is only relevant for a particular population size. Is that an accurate reflection of how the standard is applied?

Mr Riley: The NEPM standard says that, for you to demonstrate compliance with the standard, you need to—

Senator DI NATALE: No, let's use plain English here. If you have a standard, that standard is only relevant if you have a population size above a particular number. You can only use that NEPM standard for a population above a particular size.

Mr Riley: The NEPM details how you apply the standard.

Senator DI NATALE: I am trying to tease this out. The logic of that escapes me. We have determined a particular standard that is acceptable in its impact on human health. Why is it relevant whether that standard is used in a large population centre or a small population centre?

Mr Riley: Because the NEPM defines that it is related to the general population. There are other standards—particularly occupational health and safety standards—that apply to air quality that people are exposed to with, for example, any industrial facilities. The NEPM does not deal with that. The NEPM deals with the general population.

Senator DI NATALE: So are you not part of the general population if you live in a small regional centre?

Mr Riley: I am just commenting on how the NEPM is described and how it is implemented.

Senator DI NATALE: Just try to explain it to me not as a layperson but as someone has got a background as a medical practitioner and explain it for the layperson. I do not understand how you can have a standard that says, 'This is harmful to you as an individual if we exceed a particular level, but it is only harmful to you if you live in a major population centre. If you live in a smaller community the same standards don't apply.' What is the rationale for that? I just do not understand it.

Mr Buffier: Perhaps I can explain it in a slightly different way. The impacts on small communities are taken into account in the planning approval process. Camberwell, for example, which is the example most people use—

Senator DI NATALE: With all due respect, I am very keen to pursue the issue of what we think is a safe level for the community. I am genuinely interested in teasing this out. To go back to this issue of safety, why is it that we have a standard that we say is an acceptable standard, this is an acceptable level if you are living in a big town, but if you are living in a small town the same standard does not apply. What is the logic behind this?

Mr Buffier: I will try and explain the way in which we take safety into account. Safety of the community is the concern. I will try to answer how is it that we take that into account. In the planning process we take that into account and you see with noise a similar sort of situation, that where it exceeds a certain level for a small community we have a policy of acquisition. It requires acquisition because there is an acknowledgement that, with the proximity to some of those lines, you are not going to get the levels down to the standards that are set in the NEPM standards. That applies to air quality as well.

Prof. Smith: Maybe I can explain a little more. The development of the NEPMs goes through several steps. The first is to go to the literature on what the epidemiological risks are for a given amount of pollutant. The second step is to look at the monitoring data that you have in population centres. Then you map the population sizes, the morbidities from those populations. Then you do a cost-benefit looking at what are the levels that would reduce morbidity and mortality and total health economic cost to the community by reducing those levels to a certain amount. That is how they are arrived at, to look at what is the best cost-beneficial target that we can have in the nation. They are developed on population levels and that requires numbers of people to be exposed to get certain health savings, because if you do it out on the Nullarbor you are not going to save many lives, so the cost-benefit of doing something out there is really quite negligible but the cost-benefit of doing something in a big city or a large population area is much higher. So they are developed on the cost-benefit model and therefore they are applied on the cost-benefit model. That is I think what Matt was trying to say.

Senator DI NATALE: Okay, I understand that. What we are saying is that exposure to a particular substance is not strongly correlated with a health impact but we know that if we expose enough people to it some people will get sick. So we are prepared to accept a particular level of exposure in bigger centres because we know that by doing that we will have a bigger health impact, but in a sense we are saying, 'If you live in a smaller community we are not going to apply the same standard because we don't think we can get the same benefit in terms of its impact on health.' But we are also saying, 'You are at significantly higher risk if you live in that small community because the same standard will not be applied.'

Prof. Smith: That is where Barry's comment about acquisition policy comes in. From a health perspective we always advise on these things in health and we say, 'These levels are too high if we look at the NEPM standard but we were also developing incremental air-quality standards above baseline.' So if you go to an area with a particular baseline it might be very low, very clean air, and then if you pollute that right up to the NEPM level, you have added a large increase in burden on the people in that area. We do not think that is particularly fair or good to be able to do that. We are currently doing interdepartmental work on this—when I say 'we' it is New South Wales Health but I am also on the national environmental health council and they will be looking at these results as well—and we are also doing interjurisdictional work on this at the moment to come up with an incremental level above which you should not pollute. That is based on the same way that you set standards for everything else, which is: what is the risk appetite of the community? We accept risks from radiation, so you get one in 10 to the minus six excess cases of disease per one millisievert above background. For most water quality indices for our drinking water, we will accept a 10 to the minus four or 10 to the minus five increase in risk above background. We are doing the same sort of work around air, looking at: if we translate those sorts of risks that the community is generally going to accept for their environmental hazards and we apply that to air, what numbers do we come up with? That work is in train at the moment.

Mr Riley: We are very open in how we report the data. Our data from our Upper Hunter Air Quality Monitoring Network is made available to the public in close to real time from a very wide ranging network. On top of that, residents of the small community sites can elect to subscribe to our automated SMS and email alert systems. Not only is the data made available publicly on the website, if you are someone who may be sensitive to increased air quality levels in a small community location such as Camberwell you can subscribe to our automated alerts systems. Then when air pollution levels increase you will be sent a text message or an email informing you that air pollution has increased and to take actions appropriate for you.

Senator DI NATALE: With respect, I think people in small communities would like to know that the same standard is being applied to them as is being applied to the rest of the community. That would be much more comfort than getting an SMS telling them that their air is polluted.

I take the point that your real-time monitoring is very helpful, but one of the things that really worries me is the way you categorise the risk. We have to accept that there is no safe level here—it is a bit like tobacco. The numbers we set are not magical numbers under which there is no health impact, and yet when you report them you do actually say 'no adverse impacts on human health below a particular level'. Do you think that is a bit misleading?

Mr Riley: New South Wales Health can comment on that.

Prof. Smith: Yes, it is obviously not technically correct because there is no lower threshold that is known for adverse health impacts from particulate matter.

Senator DI NATALE: Are you going to change that, because 'not technically correct' means it is wrong? You do not want to put information up there that is not wrong, I imagine. Has any thought been given to changing that?

Prof. Smith: We are currently reviewing the alert process for air quality alerts. That started some weeks ago.

Senator DI NATALE: Good. Thank you.

Senator STEPHENS: Thank you for your evidence and your submissions. As a New South Wales senator I am interested not just in the Hunter but in the other areas that you are monitoring. I think it would be helpful for you to have an opportunity to put some of the work that is happening in Bathurst, Tamworth, Wagga Wagga and Albury on the record.

Mr Riley: We monitor in a range of locations across the state. As you mentioned, we do monitor in those other regional locations: Tamworth, Bathurst, Albury and Wagga Wagga. These were monitoring stations that came about as a result of the NEPM. The NEPM helped us identify a need to monitor in certain regional locations where we previously had not monitored. The evolution of air quality monitoring in New South Wales has expanded outwards from Sydney, where we initially started monitoring. The monitoring from those sites has been very helpful. It has demonstrated that, for most of those locations, air quality levels are very good and it is only during natural events such as bushfires and dust storms that we see exceedences of the PM10 standard at those locations. An exception to that would be Wagga Wagga where we have tended to see many more exceedences at our Wagga Wagga monitoring station. This is associated with a range of sources of particles. In particular, we have noticed that some of the agricultural activities that may result in particle emissions have decreased since the drought has been broken. So particle levels in Wagga over the past few years have been significantly lower than they were during the drought and that is just reflective of the amount of dust that is blown around during drought years.

I also want to take the opportunity to say that we take a strategic approach to how we choose where we monitor. A good example would be our new monitoring station at Wyong, on the Central Coast. The minister for the environment opened it in December this year. Previously, we had no monitoring stations on the Central Coast, so we had a gap in our networking between Sydney and Newcastle. By opening that station we are now getting information on air quality within the Wyong area. When we chose that station we looked at a range of possible locations and the need for monitoring on the Central Coast. We chose the Wyong station as a location that would record data that is representative of the wider community on the Central Coast. We did not choose to monitor in Lake Macquarie because we believed that there was sufficient data available from our monitoring stations in the Lower Hunter, in particular, from Newcastle and Wallsend, and data from the new Wyong station, to give us enough information about air quality in that region. But we take a strategic approach to how we choose where we monitor.

Senator STEPHENS: I am very interested in the conversation you were having with Senator Di Natale about SMS messaging or emails. Is that facility available wherever you have monitoring stations?

Mr Riley: Yes, wherever there is a monitoring station you can sign up to receive an SMS alert.

Mr Buffier: You could probably sign up, even if you are not in that area. If you want to find out what is happening in the Hunter, get an alert from there.

Mr Riley: And you can sign up from more of the locations as well.

Senator STEPHENS: Professor Smith, could I just ask you one question. You mentioned the National Environmental Health Council. Can you elaborate on the role of that council, how it was established, who is participating and what is its role?

Prof. Smith: N-Health is an interjurisdictional council. It is a subcommittee of AHMAC, the Australian Health Ministers Advisory Committee. The role of that body is to have people who are responsible for environmental health issues in each of the states and the Commonwealth to meet about four times a year to discuss the current issues, to identify bits of work that need to be done proactively over time and to publish various guidelines. We publish risk guidelines and information on how to do risk assessments, we publish issues on guidance around asbestos and we publish issues on lead. There are a range of publications that N-Health does pursue. It also has a technical working group that looks at some of the more technical issues and at how to assess those. We set out the process that I described a while ago, about looking at incremental increases in air pollution and what level would be appropriate, given community appetite for risk. That technical work is being done by my group in New South Wales, but we will then take that to the N-Health technical working group and get them to look at it before we actually put it out for stakeholder consultation and peer review to make sure that it is actually appropriate. There are two components of that. The first is the technical bit of work, the science based part of it. I am confident that is correct. The second is the assumptions on what level of risk the community will accept. That is risk appetite. A scientist cannot actually say, 'You will have this risk appetite,' but it requires consultation.

As I said before, most standards are set this way, but there is usually a risk appetite of somewhere between 10 and minus four and 10 and minus six excess risk above and beyond what you would normally get. In other words, if you got one case in 100 normally, then you would have an extra one case in 10,000 above those one cases in 100 of increased risk for a particular health outcome and we are usually talking about death here. That is the way that the process is working for us to look at this as an approach. This hasn't been done before. People have used the NEPM as a standard, saying: 'Okay, you've got to hit this goal.' That is not necessarily correct, because that goal may be too lenient or it may be too strict in certain circumstances. As the discussion earlier noted, you cannot use NEPM on very small populations that are exposed to a particular development. It does not lend itself to that because of the way it was developed. This approach will lend itself to that and it will be much clearer to people who are exposed to these risks what their actual level of risk is and what risk society is asking them to tolerate on behalf of development for all of society.

Senator STEPHENS: It is a big shift in thinking, isn't it?

Prof. Smith: That's what happens when you get an academic into the bureaucracy.

Senator STEPHENS: That's okay. Mr Buffier, in your opening remarks you talked about the planning and enforcement activities of the EPA. Perhaps you might go into some of the enforcement mechanisms that are available in terms of the issues we are discussing.

Mr Buffier: I will cover that briefly, but I will ask Gary Davey to follow on, because he is where the rubber hits the road. We have a range of compliance and enforcement activities, all the way from advisory and education through to prosecution. Within that range we have, particularly, pollution reduction programs where we require licensees to undertake activities which are going to improve the environmental outcomes. For example, last financial year in our annual report you will see that we reported that there were 398 pollution reduction programs that business had to undertake; that required an investment of \$365 million. Within the upper Hunter air particle fraction plan we are specifically mentioning the pollution reduction programs that we have just imposed on all mining operations. I'll ask Gary to talk about that. You might also talk about the compliance, where we prosecute, too, Gary.

Mr Davey: In relation to particular pollution reduction programs, we have been going through a staged process with the open cut coal mines right across New South Wales, not just in the Hunter, but obviously with a focus on the Hunter. Just recently our minister launched three new pollution reduction programs aimed at dust emissions from open-cut coalmines. Effectively they are in place now. They will be we monitored over the next 12 months and they have set some targets particularly around emissions from haul roads. A couple of years ago we commissioned an independent study by Katestone to look at benchmarking particular work practices around coalmines against international best practice. We also got the coalmines to report back on what they could do to meet best practice. We are now rolling out that in this most recent set of pollution reduction programs.

One of the issues that was particularly apparent was that dust from haul roads was a major issue that needed to be addressed. We have required coalmines to meet an 80 per cent efficiency target for dust from haul roads. That can be through a mixture of activities such as additional spraying, surfactant on roads, changing the way they operate and so on. The Katestone report also identified a number of other sources. That included the stockpiling and handling of overburden as significant sources of dust—obviously not coal dust, but dust in the Hunter. So one of the other PRPs requires the companies to look at how they can improve their overburden handling and change their handling regimes, particularly during adverse weather conditions, to reduce the dust from those overburden stockpiles.

The third PRP relates to the operation of machinery during adverse weather conditions. Clearly draglines, bulldozers and so on can be significant sources of dust, so the PRP requires the companies to come up with programs where they will actually change or stop their operations during adverse weather conditions. Some mines are already doing that; it is not consistent across the board and their approaches are variable. What we are trying to do is standardise that and work with them to come up with a definition of adverse weather conditions—it will be a mixture of wind, rain and so on—and they will modify or stop their operations during those circumstances.

The companies are required to report back to us within 12 months on how they have complied with these pollution reduction programs. Depending on what they report back to us, we will then modify measures or put in place additional measures to ensure that they continue to reduce dust and noise.

Just going back to that comment you were making, Senator Di Natale, about small communities, these PRPs will apply across the board. So they will hopefully see some benefits for small communities as well as the larger communities.

More broadly, in relation to our regulatory campaigns, we have 20 or so operations based here in Newcastle. They undertake campaign work, which is where they will go out in a coordinated campaign to look at specific issues such as operation of haul roads, for instance, and through the mining sector work on those particular campaigns. Or they can do spot checks to look at how the mines are complying with their licences. I probably should have pointed out that all coalmines have an environment protection licence that is issued by the EPA. Those environment protection licences include a series of conditions covering a whole range of environmental performance, including dust and noise. Obviously we will also respond to community complaints. If we get a complaint about excessive noise, dust or whatever it might be, we will visit that mine and we will take appropriate regulatory action.

The other issue that we have been dealing with is blast plumes and blast fumes. The level of complaints that we get on this at the EPA tends to be a little bit variable, but we have been working with industry to develop a code of practice to improve blasting operations and reduce blast plumes. We are rolling that out at present. We will just monitor that to see how effective that is in terms of compliance with the code of practice. If we find low levels of compliance then we will look at taking some additional action to address that particular issue.

Senator RHIANNON: Mr Davey, you said you respond to community complaints. If somebody in Muswellbrook rings concerned about levels of dust, do you send somebody out to investigate that? If so, how long does it take them to get there?

Mr Davey: What we would normally do is respond to a particular complaint about a particular coalmine. A complaint about dust per se—

Senator RHIANNON: Take that as an example. I am sorry to interrupt, but I am short of time. If there is a complaint about dust at a certain coalmine, will you send somebody out there to investigate?

Mr Davey: What we would do immediately is ring the coalmine and find out if there is an issue there with dust from the coalmine. We will ask them to modify their activities. Obviously you would appreciate it takes some hours to get to some of these coalmines. Depending on the response we get from the coalmines, we may send somebody up to investigate.

Senator RHIANNON: So you will rely on information from the coalmine about the levels of dust?

Mr Davey: No. What we would do is ring the coalmine to say that we have received a complaint or a number of complaints from the community. We would ask them, 'Is there dust coming from this particular coalmine?' To that extent we would rely on their advice, bearing in mind that it is a condition of their licence that if they provide false or misleading information it is a significant offence. My experience has been that mines will respond to that initial call from us, but we will follow it up if—

Senator RHIANNON: Just sticking with Muswellbrook, the EPA used to have an office there, didn't it?

Mr Davey: It was before my time, but there was a single-person office up there, yes.

Senator RHIANNON: Considering that town is now effectively surrounded by a coalmines, has there been any consideration given to the EPA locating an office there given that there is this time factor? At the moment, from your own evidence, you are saying you are relying on the company talking to you on the phone.

Mr Davey: It was probably two years ago that we had quite a lengthy internal discussion about whether we needed to have staff based further up the Hunter Valley. The conclusion we reached was that with 20 or so people based in Newcastle, it gave us much more flexibility in ensuring that people can respond. You have an office there; you might have two or three staff. They cannot always respond; those people take leave. Our conclusion was it was a much better arrangement to maintain the focus of the location of our staff at Newcastle.

Senator RHIANNON: Mr Buffier, on page 31 you detailed the upper Hunter fine particle characterisation study. I note that you say the details will be released and that there will be a peer review of the results. Can you provide details of when it will be released and what form the peer review will take?

Mr Riley: I will answer that, Senator Rhiannon. The New South Wales Office of Environment and Heritage, in partnership with New South Wales Health, is undertaking the upper Hunter fine particle characterisation study. We have engaged the CSIRO and the Australian Nuclear Science and Technology Organisation—ANSTO—to undertake 12 months worth of monitoring at two locations in the upper Hunter—Singleton and Muswellbrook. They are doing speciation studies, so using a number of approaches to try to determine what are the characteristics of the particles in the upper Hunter and help us to understand what particle pollution is composed of.

They have finished the sampling program and analysis is underway. The plan is for the final report to be released midyear, and that report will undergo peer review. It is important to acknowledge that this is a study that is being undertaken by two of the premier research institutions in this country.

Senator RHIANNON: Can you describe what process you will use for it to be peer-reviewed please?

Mr Riley: When we receive the report in its draft form, we will review it internally. The Office of Environment and Heritage, New South Wales Health and the EPA will also review it. We will also seek independent reviews from other people with experience in the field external to the organisations. It will be similar to a usual peer review process.

Senator RHIANNON: Mr Buffier, you spoke about the commitment to obtaining standards, a need for standards on PM2.5s. Considering that there is no standard for non-road machinery, as I understand it, is what you are saying mean that would cover everything, both on-road and non-road machinery?

Ms Crotty: That is a separate process. The ambient standards are about when we monitor ambient air. Separately there are Australian standards for on-road diesel vehicles. There currently are no standards for the off-road sector, which I think is what you are talking about.

Senator DI NATALE: No standards at all?

Ms Crotty: No. There are no standards for new equipment when it is brought into Australia. As part of the national process that is going on for the National Plan for Clean Air, we are very keen to see the development of standards for new diesel equipment. Within New South Wales we have a number of programs to try to address the existing equipment that is already being operated. We have a Clean Machine Program that focuses on construction equipment—we are particularly focusing on councils and businesses—and we offer subsidies for retrofitting that equipment, putting a particle trap on the equipment. We also encourage uptake of cleaner vehicles, so when people replace their equipment we give them advice on what clean equipment they can buy to meet international standards, even though we do not have them here.

Senator DI NATALE: The biggest source is clearly coalmines, so what programs are underway to make sure that we are reducing diesel emissions from coalmines?

Ms Crotty: One of the pollution reduction programs that we are currently working on is looking at the diesel equipment from coalmines. We are doing a survey at the moment of industry. We have just written to all of the coalmines—we have written it as a notice under the Protection of the Environment Operations Act—asking them to identify all of their non-road diesel equipment and the emissions that that equipment will produce. That is with a view to moving towards a pollution reduction program for mining equipment, diesel equipment.

Senator RHIANNON: It seems as though a big part of your work is putting up licences for different industry practices. When you are undertaking your work, do you look at the cumulative impacts—so, not just looking at the immediate project before you but the environmental impact when you consider there are a number of similar projects in the area?

Mr Buffier: We certainly provide that advice as part of the planning process. That was one of the points I was making about the fact that we have now adopted this target level that we are trying to achieve for the Upper Hunter. That is all around new mines that are being proposed, new activities, and what is it that we have to do to achieve that target. So if you think about that target of eight, for PM2.5, for that air shed that is a cumulative impact target that we are talking about. So we are very clearly saying that is what we want to achieve. And part of what we are doing with existing industries is looking at how we can bring about reductions in their activities, because there are further expansions planned—not all of them are open-cut mines; quite a few are not open-cut, so their industrial emissions are somewhat different, but we are modelling that air shed in the Upper Hunter now.

Senator RHIANNON: So are you at a point of that being used? If there is a proposal for a new mine are you at a point of saying, 'That would exceed the overall air pollution that this air shed could handle, and therefore it shouldn't go ahead'? Are you at the point where you are using the modelling in that way?

Mr Buffier: The modelling has not quite been completed yet, but we already provide that type of information in terms of what impact it might have, and in looking at the cumulative impact—which planning need to take into account. By setting a target we are saying that that is what we think is the level that should be established.

Senator RHIANNON: And therefore a certain mine should not go ahead?

Mr Buffier: No. What we are saying is that all the contributors to the air shed in the Upper Hunter need to be understood. So, if there is another mine coming in, if it is open-cut that will clearly increase the level of emissions; but with the PRPs that Gary was talking about we are hoping to achieve a 20 per cent reduction in existing particulate emissions from those mines. So the model will say, 'What's the overall impact of this—we

have wood smoke, diesel and mining activities', and the object is for the model to be able to tell us more precisely than at the moment—

Senator RHIANNON: So, quite seriously, on the basis of hoping that the pollution will come down in one area you then will be agreeing that a mine can go ahead—

Mr Buffier: We are not 'hoping' that it will come down; we are—

Senator RHIANNON: They were your words.

Mr Buffier: taking concrete actions to bring it down. We are saying we hope we will achieve a level of 20 per cent. But with PRPs we will achieve a reduction. It is very hard to be as precise as saying it is going to be 19 per cent or 20 per cent, but that is what the target is.

I have a very strong belief that we need to have a clear focus on what the outcomes are. We might debate the methods of achieving those outcomes, but unless there is clarity around what the outcomes are going to be then I think you just create a lot of confusion in the community about what you are trying to achieve. Here we are being very explicit in saying, 'That is the outcome we would like to achieve'.

Senator RHIANNON: Thank you, Chair.

CHAIR: Thank you very much for your evidence today. I don't think any of us gave you any homework—did we?

Senator RHIANNON: I will put questions on notice once I have read the transcript.

CHAIR: Okay, so there will potentially future homework for you. Thank you.

Mr Buffier: Thank you.

HIGGINBOTHAM, Associate Professor Nick, Committee Member, Dust and Health Committee, Hunter Community Environment Centre

KREY, Mr John, Member, Hunter Valley Protection Alliance

WHELAN, Dr James, Committee Member, Hunter Community Environment Centre

[10:29]

CHAIR: Welcome. I understand information on parliamentary privilege and the protection of witnesses and evidence has been provided to all of you. We have your various submissions. I would now like to invite you to make an opening statement.

Mr Krey: Regarding the danger to health in the Hunter Valley, we see the greatest current and long-term danger to residents' health is dust and pollution caused by the large number of open-cut coal mines and the power stations. These produce thousands of tonnes of dust and pollution each year, which we believe affects not only our health but also the health of the farm animals, the horses and the numerous horse studs and the quality of grapes used in the production of Hunter Valley wines.

Further, a visual dust environment does not attract tourism to the area. To understand the magnitude of the problem we included in our submission the data from the National Pollutant Inventory for the year 2008. This table shows the enormous volume of pollutants that fell on the Singleton local government area, having a large number of open-cut mines, compared to very low or nil deposits in other similar country areas, having no open-cut mines.

Of particular concern to us is the large quantity of PM 2.5 produced by the open-cut methods of coal extraction. In 1998 the State Pollution Control Commission established that PM 2.5s produced by open-cut coalminers in the Hunter Valley area had a total of 4.68. As a matter of interest, that 4.68 is around two-thirds of the real figures—and those are about 6½ per cent. When you take annual total particular matter of 55,000 tonnes for Singleton that is dropped into that area each year and you multiply that by 4.68, that is what is in the air we breathe. That is about 2,600 tonnes of PM 2.5s, which is massive.

The World Health Organization states that there is no safe level for dust, and that is from their health fact sheet No. 313, which was attached to our submission. The mines cannot prevent dust pollution of towns in the Hunter Valley, and yet the state government continues to approve new open-cut mines and extensions to existing mines close to villages and towns. Just as a rider to that statement: the Land and Environment Court yesterday upheld an appeal from a local resident progress association overturning the approval for the Warkworth mine expansion, which is an open-cut mine. That will have marked implications because of what the judge said, particularly about dust and the implications.

The Upper Hunter Air Quality Network was established to provide warning of dust exceedences. These monitors have recorded since September in excess of exceedences. But there appears to be no processes or programs that are able to stop the dust emissions. I was interested to hear the gentlemen who was here before, and I was thinking, 'If you are looking at outcomes, look inside my window everyday and see the dust.' That is the outcome that we are currently getting and we are quite mystified with all of those programs.

Then we get on to diesel. In addition to dust, there is a massive consumption of diesel in the open-cut mine and extraction process. Mines consumes approximately one litre of diesel per tonne of coal produced. The mine directly opposite us—this one that has just been rejected for the expansion—produces 12 million tonnes of coal a year and exports it. So that is 12 million litres of fuel that is burnt in one very small, contained area—and that is almost alongside our village in the Hunter Valley. That is just from one mine. The World Health Organization also states that diesel fumes are carcinogenic, and yet we allow this to continue.

On the health survey: a local doctor in Singleton has carried out surveys of young people and infants who have asthma and similar respiratory illnesses. The results of his research show that in the Singleton shire one in six children has asthma-like symptoms, while the Australian average is one in 20. I believe that is also supported by the University of Sydney report that came out in November last year.

On the lack of rehabilitation: the gentlemen before were talking about where dust comes from. In the big mines opposite us, they identify the overburdened stockpiles as the No. 1 producer of dust. No. 2 is the trucks, and No. 3 is the draglines. The lack of rehabilitation is a disgrace. Those photographs I included in that report show the amount of dust being produced in a big storm last year. That shows massive areas of nonrehabilitation, because that is where the dust is coming from. As I think you will see in that report, that was on a reasonably dust-free day; while that was in the dust storms, or the winds—and that is exactly the same photograph. You can see what happens when you have four mines all on a north-south alignment. When the wind blows from the north it picks

up the dust from all of those mines and blows it straight down to the neighbouring communities. They produce mine plans each year which show the rehabilitation. These are piddly. There are such small areas of rehabilitation being carried out that their stripping actually exceeds the areas of rehabilitation, so every year the problem is getting worse. The Department of Planning and Infrastructure approves these mine plans. They can bring it back to as little as 100 hectares a year, and it gets approved almost automatically.

Blasting is a daily event in the Hunter Valley. These blasts cause enormous amounts of toxic gases and dust which travel outside the mine sites into the local residences. Instead of preventing the problem, the government issues information pamphlets telling you what you should do if you are affected by a mine blast. There is the pamphlet that they send around. They are not trying to prevent it; they are just saying: 'Oh, hang on a second. If you encounter a mine blast, you'd better read this because you could be sick.' Clearly, there are lots of things there that we are not happy with.

In conclusion, we believe the way forward should be that, first, there are no new open-cut mines approved in this area or expansion to existing mines. There must be substantial increases in rehabilitation programs, with mine plans to ensure maximum rehab. If you go again to that photograph which was included in our report, you can see the amount of unrehabilitated area that produces dust for us in the Hunter Valley. No wonder we get the 100,000-odd tonnes of dust dropping on us. They have to use better dust controls for existing mines. I heard what those gentlemen said. Clearly it is not working. It is a daily event for us. We have to establish proper and genuine research, and that seems to be happening, but the clean air people from Singleton established this back in 2009, and what happened? Nothing. We have to use the precautionary principles. If we are not sure what health impacts there are, then do not do it.

The problems associated with dust and its effects on health in the Hunter Valley are enormous. Whilst incidents are reported daily, there appears to be little happening to reduce the problem. Meanwhile, our children continue to be treated for asthma and similar diseases, while the government continues to approve open-cut mines, the mines continue extracting coal and, with all due respect, committees sit around and discuss the problem. It is essential that action is taken on air pollution in Australia, and we trust that this submission will assist the Senate committee in understanding the severity of the impact that air pollution has on the Hunter Valley. What we are seeing and experiencing in the Hunter Valley pollution is what we expect to see in Third World regions. The inquiry must take action to deal with what has happened over 40 years of inactivity. The industry anticipates it, and the community expects it. Thank you.

CHAIR: Thank you. Dr Whelan, are you or Professor Higginbotham speaking, or both of you?

Dr Whelan: With your permission, we would like to speak in three parts: firstly, very briefly to follow up just a little of what has been discussed and some questions you have asked already with the previous presentation; secondly, if I could speak briefly to our submission and to clarify the recommendations we would like to make, which perhaps were not as clear as they might have been; and, thirdly, Associate Professor Higginbotham will paraphrase and summarise some of our recent work monitoring air quality around suburban Newcastle and the Lower Hunter.

I would like to table a response to a question Senator Di Natale asked about the contribution by coalmining to PM10 and PM2.5 in the Hunter Valley. The response that was given was not as clear as it might have been. This demonstrates that 66 per cent, two-thirds, of the PM2.5 in this valley is attributable to coalmining and a full 87.3 per cent of the PM10 in the valley is attributable to coalmining. Senator Rhiannon asked a question about the ARTC study and whether it would be peer reviewed, and the response related to a separate study. I believe that the senator's question was not answered when she asked it previously.

Perhaps first I might quickly summarise and try to bring together our two submissions into what I think are three recommendations. I think the line of questioning that has proceeded so far this morning does highlight failings of the New South Wales EPA to protect both community health and the environment in the Hunter. I think it would be a mistake, though, for the committee to focus on that. While I think that is true, your business is about a national matter of significance and I think that really it highlights failings of the national environment protection measure, the NEPM, which was made in 1998. At the time, I was a community representative on the advisory group brought together for the NEPM. Previous to the NEPM, each state picked and chose their targets and adopted their own approaches willy-nilly to responding to air quality or even monitoring it, and to standards. Each state had their own approach. The NEPM was a small step in the right direction and we believe that the time has come for Australia to take a much more decisive step in that direction toward the kind of regulatory framework that we have for water, the kind of regulatory framework that we have for protecting other aspects of our community and environment. I think that what we are seeing in the Hunter is indicative of what is happening around the country—that is, regulators are ignoring the NEPM.

Specifically, our submission highlights four changes that might be made, or considered at least, to the national environment protection measure for ambient air. These are in fact highlighted by the questioning so far today. The first is that these are standards to protect community health. They should apply everywhere. I think that point has been made very clearly. If there were more people in this room from the Hunter Valley I think that you would have seen a very strong response to the EPA's justification for excluding whole communities. Moreover, not only is a place like the whole community of Muswellbrook excluded; communities in Newcastle, where 30,000 people live within 500 metres of the coal corridor, are excluded. It is important to note here that the context is shifting rapidly. A fourth coal terminal is being seriously contemplated by our state government, which would dramatically increase particle loads in that coal corridor, and really that was given very little consideration. That was highlighted in fact by the Department of Health's submission.

A second change that might be considered to the NEPM would be, as the EPA highlighted, turning an advisory reporting guideline for PM_{2.5} into a standard, but hopefully not a standard that can be ignored in the way that the PM₁₀ one is currently ignored. That standard most definitely should be both annual and a 24-hour standard. We advocate standards for shorter term exposure for PM₁₀ and PM_{2.5} in light of Senator Richard Di Natale's comments that in fact people respond; their health responds to shorter term, hour, for instance, elevated levels of PM_{2.5} or 10. We also believe that there needs to be a paradigm shift with the NEPM. The NEPM provides some kind of target to which the states might strive in their licensing or regulation.

If air quality is killing people—as it is; there are more people dying from air pollution in Australia than from motor vehicle accidents—surely we need an approach that is as rigorous and enforceable as a speed limit. Surely we need a regulatory framework that says to a regulator like the New South Wales EPA when they are considering a proposal, such as T4 or a dozen new coal mines in the Hunter every couple of months: 'No, you cannot approve it. No, do not simply ask for a little more clarification of what might be done to mitigate dust levels,' as was the case in the EPA's submission on T4. Say no. That is the kind of NEPM that we are talking about.

Thirdly, I will highlight that we are concerned by the proposal by the New South Wales EPA to return to the pre-NEPM days, and that is: adhocery, state by state. For the EPA to propose a 'target' for the Hunter of PM_{2.5} would be to fail the people in the rest of the state and the people in other states. If there needs to be a standard for PM_{2.5}, it needs to apply to people wherever they live, and it needs to be rigorously enforced.

I would be happy to speak to our submissions in greater detail, but—Nick?

Prof. Higginbotham: I just want to talk a little bit about a study that we did ourselves as a community. There is a supplementary submission that you have received which describes this air quality monitoring study coordinated through the Hunter Community Environment Centre. When we learned that the coal industry was aspiring to transport up to 330,000,000 tonnes into the Port of Newcastle, we became gravely concerned that this would bring industrial workplace emissions into the homes and schools along the rail corridor. As James mentioned, there are 32,000 residents who live within half a kilometre of the rail line from the port up to Rutherford. In fact, there are 23,000 schoolchildren who also attend school within this zone. Similarly more than 23,000 residents live within a couple of kilometres of the proposed coal loader.

What would be the fine particulate and diesel emissions from the 108,000 yearly train movements needed to get this amount of coal into ships? That was the question that hit us in the face when we first looked at that. When I say 108,000 train movements, that is going to the port and then returning again.

The T4 environmental assessment lacked the information, and one wonders why the EPA did not request that as one of their replies to the environmental assessment. But when that information was not present, we were compelled to fund, to design and to carry out our own study. After extensive consultations with experts—Professor Lidia Morawska and Professor Howard Bridgman, who is here today—we hired three Osiris instruments for continuous measurement of particulates at PM₁₀, PM_{2.5} and PM₁. This is the same instrument used in the ART rail study.

So, over the month of December, 11 residents living near the coal rail line and several near the Carrington coal loader volunteered to have the monitors set up in their backyards, each for roughly a week. We placed them carefully, following advice from Professor Bridgman, and Professor Bridgman independently then analysed the data that came from these monitors.

What did we find? For seven of the 11 residents, the PM₁₀ national standard of 50 micrograms per cubic metre over 24 hours was exceeded on at least one day. At Carrington, the standard was exceeded on all five days that the monitor was there, including two readings at the 80 microgram mark. At Tighes Hill, five of the seven days were over the standard, with a maximum reading of 67 micrograms for 24 hours.

There was a pattern for higher levels of particulate pollution to be recorded when the wind came from nearby coal stockpiles or the coal train lines. Of particular interest with the results was a rural property, quite some distance away from any metropolitan area but bordered by a coal track, in the township of Lochinvar. On one day where the winds were low, the concentrations actually built up to a PM10 exceedence. As well, there was a series of very high spikes that we noticed in the data, some over 1,000 micrograms per cubic metre, that appeared to be a real phenomenon, and 60 per cent of these pollution pulses came from the rail direction.

Thus our monitoring found particulate concentration levels associated with adverse health impacts, especially for vulnerable people: the young, the elderly, those with existing lung and heart diseases. The highest risk was in the areas of lower socioeconomic status where people are least able to manage imposed harm. We conclude that it is vital to have independent research to establish the fugitive emissions shed by coal trains along their journey to the port and to inform the community how much coal blows off the back of the wagons under different conditions. We also, and very importantly, need to discover what the diesel emissions are per train and how far those emissions spread into the community before dispersing. We have no information about that whatsoever. Defining air quality along the rail corridor should include studies to characterise fine and ultrafine particles, telling us the source and composition. This approach needs to be the prerequisite for any development that adds particulate pollution into the Hunter air shed.

In sum, and this echoes the things that have been said all along, unless monitoring takes place in pollution affected local areas populations most at risk will not know the quality of the air that they are breathing. The background ambient readings from the Lower Hunter EPA sites do not get at this problem. Industry monitoring around the port has given us an indication but it is not integrated, it is not interpreted and it is not made accessible. Thank you.

CHAIR: Thank you.

Senator DI NATALE: Let me start with the graphic you have just presented on the contribution of coal to PM10 and PM2.5 emissions. There is obviously a discrepancy between these figures and the EPA figures. Is that because when you actually take out the data from Sydney and Wollongong and focus specifically on the Hunter you get this sort of number? Where does that discrepancy come from?

Dr Whelan: You are looking at an EPA publication. This is a page from a publication shared with us by the New South Wales EPA last Friday and the data is sourced from the emissions inventory of 2010 so this is not data prepared by our community group.

Senator DI NATALE: This was not included in the EPA submission, which I find surprising. I take it that what they have done is take out some of the other areas which do not have the same contribution and you are left with this data. Would you assume that is where we get the discrepancy as to what was presented, which was presented in the submission? Sorry, I take that back. It was presented. The graph I was looking at was a different graph. No, that is fine. That is my mistake. I want to ask you about the question of monitoring, which goes to the heart of this issue. When the community decided to take this up as a community initiated activity was there a request made of the EPA to essentially provide this sort of monitoring? If so, what was the response?

Dr Whelan: The community's request of the New South Wales government took the form of sustained community concern and voices over a long period of time. The EPA's response to that community concern about coaldust in the coal corridor was to require the Australian Rail Track Corporation, the ARTC, to undertake their own study. Our study became necessary when the ARTC study was widely discredited. The ARTC study findings, we felt, were misrepresented in media statements by the EPA, and we are happy to elaborate on that. Suffice to say it was an inadequate study, it did not answer the questions that Nick highlights as to how far coaldust does permeate into our residential areas, what levels, what it is from and so forth. It necessitated our commissioning our own study.

Senator DI NATALE: It has been suggested by somebody to potentially make available mobile monitoring stations so that we get a better sense of what is going on in individual communities. I imagine that would not be a great expense and, given what was done here was effectively short-term monitoring done at a number of sites, would that be one possible solution?

Prof. Higginbotham: Yes, I think that would be a valuable pathway to follow. I think one of the critical things is for the community members themselves who are most concerned about this issue to be able to have input into what is measured and the placement of mobile monitors to answer the questions that they have most. The EPA initiative was one that was done without any kind of discussion with the people around here.

Senator DI NATALE: Which initiative is that?

Prof. Higginbotham: The EPA ARTC rail corridor. When we learned when it took place during the winter months and the locations where the coal trains were, at best, at a walking speed and so forth, we began to realise that it did not appear to be an appropriate test of the questions that the community had. In fact, I think it was a pilot study. It is fair enough to do a pilot study and do a snapshot to learn where your methods fail. Certainly around the Mayfield site you could not draw any valid conclusions whatsoever, from my point of view, from how it proceeded there, and they recognise that. So it is a first path through. In a similar way, our study is indeed a pilot study. It is a snapshot. It is an indication of pollution levels. I think that the trust would be built up stronger in the community if we could have these kinds of conversations, and mobile monitors, which you are saying might be a solution, could be deployed in ways that are satisfying to all parties.

Senator DI NATALE: I want to ask you about the rail study. Because we ran out of time I did not have an opportunity to ask the EPA, but I will certainly put this question on notice. Looking at the report, I see that the report indicates that there was an increased concentration of PM10 and PM2.5 in the rail corridor, and yet the EPA states that there was no increase in exposure in that same area. Do you have any understanding about why those public comments were made? I know this is unfair to the EPA; I would like to ask them. Do we have a sense of why we have public comments that seem to be inconsistent with the data?

Prof. Higginbotham: When we heard the initial announcement by the chief executive officer on air, the main point that he wanted to communicate appeared to be that there is no difference between any sort of trains. It does not matter if it is a freight train or a coal train; they are producing the same amount of dust. So it seemed to us to be saying, 'Don't worry about the coal trains; they're just like any other train,' and that just did not reconcile with anybody's common sense. We know that 1,600 tonnes of coal travelling down through a neighbourhood has a dispersion of coal. It falls upon the railway track and, when other trains come by, they stir it up. But the measurement process that was undertaken did not have the sensitivity or ability, methodologically speaking, to distinguish between the amount of dust coming off of a coal train and the amount of dust stirred up by other trains passenger and freight. I cannot answer why they took that tack, but the report sounded a lot different than public reports on that report.

Senator DI NATALE: I will not get bogged down on this, because I think this is more a question for the EPA, so I will perhaps put that in on notice. The EPA stated that they hoped to achieve a 20 per cent reduction and were going to rely on a whole range of pollution reduction programs and regulatory interventions. What is your response to that? Do you think that is an achievable target? Do you have confidence that they will be able to get there?

Dr Whelan: The short answer is no, the community groups do not have that confidence. There has been no particular trust between the community and the regulator here. I want to make the point that there is a pattern and it is not Hunter-specific. I know that coal-affected communities in other parts of the country feel the same way. I think it underscores the inadequacy of the NEPM that we were describing before. We have a speed limit of 100 kilometres an hour. It is the regulator's responsibility to ensure no-one goes over that. Similarly, we have a standard for PM10 of 50 micrograms per cubic metre over 24 hours. It is the regulator's responsibility to ensure that is not exceeded. In 2012, that was exceeded in the Hunter Valley more than 115 times that we know of.

Community groups probably would welcome that initiative. It is important to say that we have no confidence that, if that mobile monitoring were to record an exceedence at any location, the regulator would feel any sense of compulsion to act. We want a regulatory framework that delivers us air quality better than the standard.

CHAIR: Mr Krey, did you have anything to add to that?

Mr Krey: Just one point. I have this judgement from yesterday. The particular point I would like to raise here is that, even with these approved methods of minimising dust put into the original consent, the judge's finding was that 'no confident conclusion can be reached that the air quality impacts of the project will be acceptable in practice'. That is the bottom line. What concerns us is that all the measurements in the world are happening at the moment but we see no increase or decrease. We see no increase in air quality and we see no decrease in the dust. While we cannot measure the dust, we see it every day and it is not getting any better. I have here an aerial shot of a large open cut mine. The brown part of that is the concentrations of dust. The little brown part of that is our village. You can see that we get massive concentrations of dust. We are very enthusiastic about having monitoring stations, but (1) it needs to be acted upon and (2) what is a long-term solution to this? You can shut down machinery but that is only very short term. It does not fix the problem. After those photographs we showed you were taken where the dust obliterated all the hills behind we checked with the mine and all the machines had been shut down because of the nature of the wind. Yet that was the dust we got.

Senator DI NATALE: Do you think that one of the appropriate responses for assessing whether a proposed mine or an expansion will have a significant health impact is to have a more comprehensive health impact assessment done at a mine site? Perhaps, Professor Higginbotham, that might be one for you.

Prof. Higginbotham: I think the development application process not just for mines but any large-scale development in this state should require a health impact assessment. A health impact assessment considers the characterisation of the population around that development that may be placed at risk by the development and it estimates the potential health impact. It looks at means and mechanisms for altering the proposal as it is being progressed so that it can minimise those effects. We have an aspiration in the state. There is expertise in this state for quality health impact assessment work. I teach at the university. I require all of the public health students to do a health impact assessment proposal for an activity. It is a very critical and missing link in the development application process.

Senator RHIANNON: Thank you for your submissions and evidence. I think you were here when I asked some questions of the EPA about a Muswellbrook office. I was just interested in your response to that. I understand the importance of and the need for enforceable standards. Is something that your groups have given consideration to that it is one thing to get the standards but it is another thing to change the culture and to actually have that acted upon? Do we need EPA offices in other places, particularly where there is a greater concentration of mines? Have you given any other consideration to how we follow through once we do get those regulations in place?

Mr Krey: Certainly from our side we think the approach that the EPA takes where they phone the mine and ask, 'Is that you?' means that they will have four mines in a row say, 'Not us.' That will happen unless you are there. The New South Wales planning people have compliance offices. We have this problem of split responsibility. The EPA does not want to know about noise. The EPA wants to know about dust but does not seem to do anything about it. We are confused as to where we should go. When we have a dust complaint we report it to all three—the mine, the EPA and the department of planning. The department of planning seem to be the only ones that are reasonably active. So we would welcome all those roving EPA inspectors, because dust is not a one-off event. That photograph I have shown you is in that report of ours. The dust coming from those machines in that pit—they have now built bung walls either side of the road at some of these pits—

Senator RHIANNON: So you cannot see it.

Mr Krey: to make sure you cannot see it. And, surprising surprise, the dust at night-time seems to be more than the dust during the daytime. I would not draw any conclusions from that, except it is very difficult for us to do anything about dust, because it is such a major problem for open-cut mines. This is why we are very much opposed to any further expansion of open-cut mines, because I have no idea how you can stop the dust being produced.

Senator RHIANNON: Just on the dust at night-time, I realise that we cannot see what is going on, but are you raising that possible discrepancy because of concerns that the water spraying and other actions that are taken may not occur of a night-time? Is that what you were referring to?

Mr Krey: Yes. We have received advice from people within the mine that, when they are getting behind production, they will stop the water truck and take the driver off the water truck and put him onto the dump truck and then continue, because clearly—you are right—you cannot see dust at night-time. So it comes down to mine practices. Clearly they have got targets to meet. They run a business. But we believe those targets do affect us.

Dr Whelan: With the SMS alerts that the EPA were mentioning before, it is true to say that they are received in the night-time more frequently than they are received during the day. I received two or three last night. Really they are telling the community that the EPA is failing, each time we get one of those. In the upper Hunter, people will tell you that there is not an EPA person who can look at these things between 5 pm and 9 am, or 5 pm on Friday and 9 am on Monday. Often it has been observed—it is anecdotal perhaps—that during those periods of time the dust levels are highest, times when they cannot get a response.

Also, in response to a recent proposed mine expansion, the proponent submitted in their environmental assessment that they had examined best practice dust mitigation measures—like the Katestone report that the EPA mentioned earlier, which is best practice for dust minimisation from a mine—and they propose that, of the 70 mitigation strategies that they were aware of, they would implement 17, in a valley and an airshed that is experiencing an acute air pollution problem. It does not get any better than this around the country. This is as good as it gets, and it is not good enough.

Senator RHIANNON: If you ring up and make a complaint to the EPA that you are concerned about levels of dust, do you get an answering machine or a person? What does that person say to you and when do you hear back from them?

Mr Krey: You get either the answering machine or a person, and they record your complaint. That is as much as we know. That is as far as it goes. From the community's point of view, we get no feedback at all.

Senator RHIANNON: So you do not even get a visit—you do not know of somebody coming out?

Mr Krey: No.

Senator RHIANNON: So they literally just record what you are ringing up and stating to them?

Mr Krey: Yes, and then, I would suggest, they put it into their monthly report that they received X number—as the department of planning does. For example—this is noise, not dust—the Warkworth mine received something like 150 calls last month for noise. They do something about it. With the dust, they say: 'That's not our bailiwick. It's not our problem. You talk to the EPA.' The EPA says: 'Thank you very much for your call. We will take note of your complaint.' And that is where it stops, and the dust continues. So you can understand the community's point of view. There may be things happening in the background, but we do not know about it. Again, you look at the outcomes. There is that dust again the next day. It is still there.

Senator DI NATALE: So you have seen no visible improvement since the EPA implemented—

Mr Krey: Absolutely no improvement.

Senator DI NATALE: their Dust Stop program of pollution reduction. I cannot remember the exact number, but it was over \$300 million worth of initiatives.

Mr Krey: If you were able to get over the top of the mounds, and illegally get over the fence, that is what you would still see. Of a morning we see the dust in our environment, which is simply just a haze of dust. That is over the Mount Thorley mine and it rises almost every morning. These are depositional dust areas, but when the wind blows the dust that has been in the atmosphere that has fallen here says, 'I'm heading off down to Broke, or I am going up to Muswellbrook or Singleton, and will drop myself into there.' You cannot contain it within the sites; it just blows everywhere.

Senator RHIANNON: Dr Higginbotham, in your submission you spoke about environmental injustice. Could you expand on what you meant by that, please?

Prof. Higginbotham: We have done work for a number of years in the Upper Hunter and the key issue in environmental injustice is whether the people who are most affected by the harmful effects of any industrial activity have any say or have an ability, in any way, to influence what occurs to them. The environmental injustice for the Upper Hunter, in particular, is all the things that we have heard today. This small group of people are the ones for whom the greatest amount of harm has been done for the sake of the economic attribution for the extractive industries, and yet they are the least able to sway or to make changes to protect themselves.

The other thing that I want to draw attention to is the impact on individuals and individual families of living in those environments. It is almost their job on a daily basis to have to deal with the mines, the regulators and the council to try to protect themselves. You can imagine the emotional toll that that takes and the stresses and strains on families right around that region. This may be getting off the point a bit, but we studied the psychological effects on families who were facing these major transformations of their family farms and so forth, and we began to realise that there is a level of environmental distress and the idea of solastalgia, where you are losing what you treasure the most in your place, in the place that you belong to. You are losing it while you are there, and it has gone. These are part of the psychological harm that is mixed up as well with the intrusion of these particulates into people's lungs.

Mr Krey: Following through on the impact, I have a neighbour who phoned me last week to say: 'I am desperate to sell. I have a baby of six months and I am aware of the dust; I am aware of the reports. I am desperate to sell. I have had my property on the market for nearly 12 months and I haven't had a single buyer, because people are not interested.' This is partially because of the publicity surrounding these things and the mine expansions, and she is desperate to get out. That is only one that I am aware of, and there are other children in our area whose parents would say, 'We would love to sell,' but because of the location of the mines and their possible expansion—and hopefully yesterday's judgment will fix that a little bit—their property values have gone down substantially, and they cannot afford to relocate into a non-mining area. So they are caught; they are stuck. They cannot raise the capital through the sale of their home to move to somewhere that has cleaner air, because those cleaner air places have higher property values. To use a technical term, they are buggered. Sorry.

Senator RHIANNON: Dr Higginbotham, I think in your submission you cover some work about Kooragang Island and looking at the communities there in terms of their levels of disadvantage.

Prof. Higginbotham: Yes.

Senator RHIANNON: These are people who are being hit by air quality problems.

Prof. Higginbotham: That is right.

Senator RHIANNON: Could you expand on your findings there?

Prof. Higginbotham: When we became aware of the proposed fourth coal loader we had a look at the 22,600 residents living within a couple of kilometres of T4. We found that these were people that you could characterise as having lower household incomes and higher rates of unemployment and that about a third of them were children and the elderly. As well, there were 21 nursing homes, schools and preschools. So you could characterise these places that will be the most affected as being places where the residents who live in those places have the least material resources to cope with the increase in pollution or to take up the idea of moving away if it is too bad. Some people say: 'Well, if you're living next to a rail line why don't you just sell up? If it's so bad, just sell up.' The people cannot sell up; they do not have those opportunities.

We did a partial health impact assessment on the T4 and that allowed us to see that, in terms of people's socioeconomic status, the least able were those most exposed. We might expect that those are the sorts of people that might have the more chronic diseases as well, because we know that there is a social gradient in disease and economic status, but we do not have the fine level of medical or epidemiological data to know how many people there have existing heart conditions, respiratory illnesses and so forth.

Senator DI NATALE: I have a question about PM2.5. The EPA have announced that they are looking at an annual target around PM2.5. Do I understand your concerns are focused on (a) the fact that we should not just have an annual target, we should have at least daily monitoring, and (b) the fact that, if one individual authority is going it alone, this represents a breakdown of what should be a national standard?

Dr Whelan: Both of those observations are correct. That would be an instance of one jurisdiction's regulator cherry-picking standards. To dismiss a 24-hour average for PM2.5 when the advisory reporting guideline has been in place since 2005 would be astonishing. We cannot cherry pick these things. I have to say the progress toward the adoption of a 2.5 standard by the Australian governments collectively has been breathtakingly slow. It was 1998 when the NEPM was first made that the conclusion was made that we must move towards a standard of PM2.5. A review was meant to occur relatively quickly and to have seen that adopted.

The only impasse, it seemed, for a 2.5 standard, given that the health research was sound and solid—we knew that we had to have one—was that there was not a lot of data from monitoring. We now have 15 years of monitoring 2.5. Although the EPA said here that they are really only looking at PM2.5 at a few places through the Hunter, in fact pretty much everywhere where particle pollution is monitored, 2.5 is monitored—it is just that there is no obligation for the regulators to report it, to integrate it, to act on it.

CHAIR: Given the information we have heard about 2.5 being bad, why hasn't there been a lot more action to push this along?

Mr Krey: That is a very good point.

CHAIR: I was involved in lobbying to get the whole NEPM up in the first place a long time ago. It seems incredible to me that, all this far down the track, we are still waiting for it.

Mr Krey: This report was done by the people here in 2009. It is horrendous. The information in that report was 2.5s, yet here we are in 2013 and we are probably not much further advanced.

Dr Whelan: The same comment could be made of PM1. In general terms, the smaller the particle, the more significant the health impacts and the more directly related to adverse health impacts that is. The same equipment that monitors PM10 monitors PM2.5, monitors PM1. There is interest internationally to move toward a PM1 standard, perhaps as with PM2.5. The World Health Organization recommended guidelines for PM2.5 and standards in 2005. That is eight years ago now. Australia has not acted; many other countries have. We are very slow to adopt standards, and when we do they are not really standards.

CHAIR: We will definitely follow that up when we get the Commonwealth department in.

Mr Krey: And we are very unhappy with the averaging approach, because you get these high peaks of dust but you average them out. In the area of noise, if you fired a howitzer and then measured the noise over 15 minutes there would be no noise at all. It is the same with dust. When the peaks come they are the ones we breathe in. The various authorities look at averages over the day, the month and the year. We are looking for those

peaks. Those are the ones that we are concerned about. All the stuff I have read has said that that is not going to happen and we are just going to look at averages, and that is no good.

Dr Whelan: If I could convey to the committee the request of many other communities to have this opportunity that we have had. Our environment centre has received communication from many other places around Australia expressing the strong desire to interact with you. If there were time to do that in your deliberations—and I know you are working to a time frame—that would be appreciated.

Finally, following the EPA comment, I commend to senators the importance of integrating your work with the national action plan for clean air. It is an utter mystery to the community what might be happening around that national action plan. There has been no communication with anybody about that. The New South Wales EPA is leading the process and other jurisdictions are involved, but we are not aware of any environment group or centre or community group in the country that knows what is happening with that action plan or has had an opportunity to participate in any way.

CHAIR: We will note that and follow it up.

Prof. Higginbotham: Could I leave with one bit of information. A colleague in my office has looked at what it would be like to breathe air for PM2.5 at the standard of 20 micrograms per cubic metre. Using a very long-term dataset he found that it was equal to smoking three cigarettes a day. That is an interesting and very concise public health message. If you are breathing the air at the standard for PM2.5, it is like having three smokes. And I think the committee has talked before about the importance of understanding the effects on health of exposures that are below the standard.

CHAIR: Thank you very much. I do not think we gave you any homework. I would get out while the going was good in that case. Thank you very much.

Proceedings suspended from 11:22 to 11:37

BROWN, Ms Arti, Policy Manager, Environment and Health, New South Wales Minerals Council

KELLAGHAN, Mr Ronan, Principal Consultant, Air Quality, Minerals Council of Australia

McCOMBE, Mr Christopher, Assistant Director, Environmental Policy, Minerals Council of Australia

WAGNER, Mr Drew, Executive Director, Northern Territory Division, Minerals Council of Australia

CHAIR: I welcome representatives from the Minerals Council of Australia. I understand information on parliamentary privilege and the protection of witnesses and evidence has been provided to you. Do you have anything to say about the capacity in which you appear?

Mr Kellaghan: I am from Pacific Environment.

CHAIR: Thank you. I would like to invite you to make an opening statement. I presume you have arranged amongst yourselves who is speaking. Then we will ask you some questions.

Mr Wagner: Thank you, Madam Chair. Good morning, senators. The Minerals Council of Australia very much welcomes this opportunity to address the Senate committee and to provide evidence on the intersection between air quality and the operations of the Australian minerals industry. We are also joined today by our colleague from the New South Wales Minerals Council, Ms Arti Brown, policy manager for environment and health.

The minerals industry is fully committed to its social licence to operate. Management of air quality and its potential impacts on communities is fundamental to this commitment. Accordingly, the industry has invested and continues to invest in improved scientific understanding of air quality and industry impacts and in the development of leading-practice approaches to the management of air emissions. The minerals industry is also committed to continuous improvement in our performance. Accordingly, the industry has invested and, once again, continues to invest heavily in better science and the development of innovative technologies to support improved management and control of particle emissions. Some examples of these have been provided in our submission, which the senators already have.

In the submission, the Minerals Council of Australia does not attempt in any way to minimise the existing protections or to draw conclusions on the impacts on human health of air quality. This is an evolving field and will require specialist scientific assessment in the Australian context by suitably qualified experts. The Minerals Council of Australia does, however, wish to provide the committee with some context around air quality, particularly as it pertains to the matters of operations of the minerals industry and hence, because of this, has engaged Pacific Environment Ltd to provide independent specialist commentary on these issues. The report arising from this review has been attached to our submission, as provided to the senators. We are accompanied today by Mr Ronan Kellaghan, principal consultant of Pacific Environment Ltd, as well.

The MCA would like to draw the committee's attention briefly to several of the key points regarding air quality and particulate emissions. Firstly, air quality matters need to be viewed in context in terms of both particle size and composition, the type and source of these particles and the proximity and size of the population exposed, as the senators discussed with the EPA earlier. Not all particles carry the same potential risks to human health. There is a clear distinction between coarser particles of crustal origin, such as those derived from mining activities and construction, and the fine to ultrafine particles derived from combustion activities, which may include motor vehicles, crematoria, wood heaters, power generation and naturally occurring events such as bushfires. It is well understood that the health risks of finer particles from combustion sources, and particularly ultrafine particles, are greater. Specifically, these finer particles, unlike larger crustal particles, are able to penetrate more deeply into the lungs and affect respiration. The risk to human health is a product of both hazard and, in this case, the size and composition of the particle, the particulate matter, and the exposure. It should therefore be recognised by the committee that, due to the use of buffer zones, direct exposure to particulates from mining is unlikely from a public health perspective. Instead, motor vehicle emissions and wood smoke in residential areas at this point in time are recognised as posing a greater health risk.

Secondly, Australia is an international leader in its approach to the management of air quality. Australian standards on air quality are more stringent than other science based international benchmarks, including those of the US and the EU and World Health Organization standards.

Thirdly, government action in relation to air quality should be risk based, have regard to sound science and represent the minimum effective approach to manage potential impacts on human health. Additionally, risk perception and communication are key considerations in developing initiatives to build community confidence in air quality monitoring and ongoing management. The vacuum created by poor communication of science and risk increases uncertainty for the community and provides room for spurious claims which increase public concern.

We thank the committee for our opportunity to present and speak to our submission today and are more than happy to field any questions that you might have.

CHAIR: Okay. Does anybody else want to make any other comments to start off with? No?

Senator DI NATALE: Thanks very much for your submissions. I am just interested in, firstly, your view of the proposed new standard for PM2.5. I am not very clear from the submission whether in fact you are supportive of that proposed standard. It seems that your view, based on what you have said in your submission, is that it is perhaps a little too strict when compared to international standards, but I might be misreading that. I am interested in your view of the proposed standard around PM2.5.

Mr McCombe: On your question: with regard to a suggestion that we consider it to be too strict, we are certainly not suggesting that. One of the reasons we included that within the report that we provided to you was simply to provide context around where Australia sits in the international context.

Senator DI NATALE: Okay. So what is your view of the standard?

Mr McCombe: That is quite a technical question, so I cannot provide you with a specific view on that standard. It is beyond my level of expertise.

Senator DI NATALE: Is there anybody who would like to make comment about whether the PM2.5 standard that is being proposed is appropriate?

Mr McCombe: The only comment I may make is that in the international context it is a strict standard. That speaks for itself that PM2.5 is taken very seriously in Australia. Regarding the health basis for that standard, we are not in a position to provide you with a technical background or source behind that standard. It is certainly beyond the scope of our submission to you.

Mr Kellaghan: The setting of a PM2.5 standard in Australia is critical. In your opening question you mentioned the application of the new standard. I presume you mean going from an advisory reporting standard to an actual compliance standard.

Senator DI NATALE: Yes.

Mr Kellaghan: The most recent detailed science that has been completed has come out of the US and they have adopted a standard that is 50 per cent higher than the Australian standard. I think the review of the standard should take into account the latest science. The 2.5 standard of 8 was set up as an advisory reporting standard in 2003. They need to review the latest evidence in terms of updating that standard. What that standard should be I do not really want to make a statement on. However, I would point out that both the US EPA and the World Health Organisation have said that below levels of between 11 to 15 micrograms per cubic metre the confidence at which there is a causal relationship between significant health effects becomes weaker and they have less confidence in that. I think that is an important point to make. There is appreciably less confidence in the associations once you go below that level, and that is a level of 12 for the US EPA, 11-15 for the World Health Organisation and we are currently at 8. So I think that needs to be looked at.

Senator DI NATALE: One of the statements in the submission essentially says on compliance with NEPM standards that you have got an issue with the way they are occasionally used in that you think the intent of the NEPM is that they are applied at monitoring locations and they are not influenced by a particular pollution source. Can you explain that a bit to me?

Mr McCombe: With regard to that comment, I might refer again to our expert on air quality.

Mr Kellaghan: The NEPM air-quality monitoring stations were set up to provide a picture of exposure across the population in general. They were not established as peak monitoring sites. There is a distinction in setting up monitoring stations between background sites and peak sites. A peak site might be next to a road or on a mine boundary, for example. A background site is set up to establish what the general exposure levels are for the community as a whole in population centres.

Senator DI NATALE: I suppose what you are getting at there is that you cannot necessarily attribute what is happening at a mine site to what is going on at a monitoring station. Is that the point you are trying to make through that statement?

Mr Kellaghan: Correct.

Senator DI NATALE: We have seen a number of levels through the Upper Hunter where air-quality standards have been exceeded, in some places quite regularly. What sort of contribution do you think the mine sites in those areas make to those breaches of the standard?

Mr Wagner: Without the appropriate backgrounding levels it would be difficult to actually quantify what those levels were.

Senator DI NATALE: Do you think it makes any contribution?

Mr Wagner: Once again, without the background we would not be able to know. There are a lot of naturally occurring background levels across the country in different areas. Without knowing what your baseline was to start with, it is very difficult to notify what a specific point source is moving forward with what impact that point source may or may not be having.

Senator DI NATALE: I suppose that is probably the crux of all of this, isn't it? What we are trying to determine here is whether the activities of the mining industry are contributing to the poor air quality in some of these regions through the Hunter. You are not expressing any opinion about whether there is any contribution whatsoever. Are you suggesting that the industry makes no contribution?

Mr Wagner: No, not at all. It is very difficult to quantify what that level of impact may or may not be though. It is not to say that there would be no impact, just as there would be impacts from every other industry or operation in that region as well.

Senator DI NATALE: I am not asking you to quantify it. I am just saying: do you think that the industry makes a contribution to the poor air quality in the Hunter? It is a pretty straightforward question.

Mr McCombe: May I follow on from my colleague's response. Without a doubt, the industry by its very nature makes a contribution to particulate emissions. It digs, it has haul roads, it transports material. But as part of that, and this is where the context comes in, you need to look at the composition, the size and the very nature of those particles. For example, if it is a rock it is not going to go very far. If it is dust, depending on prevailing weather conditions, it will go a certain distance but then it will drop out—especially if it is coarser particles. If it is ultrafine particles, they are not sourced from mechanical digging. They are not sourced from haul roads. They are sourced primarily from combustion sources. It has been identified that wood smoke is a key combustion source of concern. In fact, I might draw your attention to the recently-released COAG Standing Committee on Environment and Water, communique of 11 April, where they have indicated that they are releasing a regulatory impact statement on reducing emissions from wood heaters. So obviously this is recognised as a key source. Not all particles are particles. That is probably a key concept to consider as part of your deliberations. Combustion particles are not only smaller—they fit into that fine-ultrafine category—but also they may be more potentially carcinogenic than, for example, crustal emitted particles.

Senator DI NATALE: I understand the point you are making. Essentially, by the nature of the way mining is conducted, we are talking about larger particles making less of a contribution than fine particles, which are more dangerous to people's health. It is fair to summarise in that way.

Mr McCombe: That is correct. Without a doubt, we recognise that the industry, by its very nature, contributes to particle emissions.

Senator DI NATALE: But the EPA state in their submission that mining for coal accounts for 66 per cent of PM2.5 emissions. That is inconsistent with what you have just told me, which is that you feel that it does not make a significant contribution to PM2.5.

Ms Brown: The report that has been released by the Environment Protection Authority takes an annual average of emissions but that particular data does not take into account seasonal variations. Whilst the industry does make PM2.5 contributions, there are times of the year when the Environment Protection Authority and New South Wales Health have acknowledged that, for example, wood smoke in the winter months makes a significant contribution. In the Hunter region we are looking at up to 85 per cent contribution levels.

Senator DI NATALE: Let me break down this graph for you. It says 66 per cent from mining of coal, 13 per cent from heavy vehicle emissions—largely from coal—and then we look at some of the other contributions that you mentioned. There is solid fuel burning for domestic purposes, 0.6 per cent; land-based extractive activity, 0.4 per cent; gravel and sand quarrying, 0.2 per cent; bushfire and prescribed burning, four per cent. I understand that there are other factors, but the EPA have made it very clear that by far and away the biggest contribution of PM2.5 is from the mining industry. Yet the submission before me seems to indicate that, 'Look, we are not really major contributors to PM2.5 emissions', and yet here I am looking at the EPA's evidence, which says it is responsible for two-thirds of PM2.5 emissions. How do we reconcile those differences?

Ms Brown: I think it is important to acknowledge the role that industry is playing in better understanding what level of emissions the industry does make and what composes any particulate matter in the upper Hunter. The Upper Hunter Air Quality Monitoring Network is funded by the New South Wales mining industry and

power generators, on the basis that there is a great deal of science that still needs to be had and understood before any conclusive statements can be made and any fingers can be pointed in particular directions.

Senator RHIANNON: But you have made a fairly conclusive statement here on page 3:

Only a small proportion of mines' particulate emissions comprise of PM_{2.5}...

In this pie chart, that very large grey area is the PM_{2.5}s; that is from page 5 of the EPA report. So you are left concluding that you do dispute those figures.

Ms Brown: The industry acknowledges it makes 2.5 emissions. What level is, in our view, not conclusive. I cannot comment on or defend or give you the science behind the Environment Protection Authority's numbers, but I can advise you of the industry's views and it feels that there is still some work that needs to be done in this area to quantify our emissions.

Mr Kellaghan: I think it is important to make the distinction between an emission estimation at source and a concentration in air that people are exposed to. Your initial question asked if the mining industry contributes to some of those exceedences that you have seen in the Hunter, and it will contribute. It will contribute particle emissions, as my colleagues have said. But it is important to distinguish between what you are seeing in this pie chart as 66 per cent of emissions—that is emissions at source; that does not mean there is 66 per cent contribution where it is measured in Singleton or Muswellbrook, for example—

Senator DI NATALE: Sure, but if you are living—

Mr Kellaghan: so the contribution of—

Senator DI NATALE: Let us assume—

Mr Kellaghan: Sorry, Senator—

Senator DI NATALE: Let us assume I am in a small community and living next to an open-cut coalmine. Mr McCombe said that it does depend on particle size. He is right, absolutely. We are talking about fine emissions here. We have a process that contributes to 66 per cent of total PM_{2.5} emissions—which are, by nature, fine particles that can be carried long distances. You are living in a rural community where there are no other major sources of PM_{2.5} emissions. It may be the middle of summer; wood smoke is not an issue. Heavy traffic is not an issue. What else could be causing those sorts of exceedences that we are seeing? I mean, if it looks like a duck—

Mr Kellaghan: As to the exceedences that you see in Muswellbrook, for example, the EPA has attributed those to wood-fired heating.

Senator DI NATALE: In summer?

Mr Kellaghan: Not in summer, but they have been occurring in winter.

Senator DI NATALE: Then let us look at some of the other areas where there have been exceedences. I can pull out the list of monitoring stations where we have seen a number of exceedences. For example, we have the community of Singleton with 29 exceedences; we have Mount Thorley with 28 exceedences; we have Camberwell with 22 exceedences. We are talking about 114 occasions over the course of the last year. Are we saying that that is all from wood smoke?

Mr Kellaghan: The EPA is currently jointly conducting a number of studies to actually get more data on the composition of these particles which will help answer the question of how much is contributing to those exceedences and it will actually quantify it. So they are looking at a couple of things. They are looking at a particle model to determine where the stuff is coming from, and they are doing an extensive particle characterisation study at those monitoring locations. That would certainly contribute to quantifying where these sources are.

Senator DI NATALE: I will move on because I am not sure we are going to get much further with this. I can understand the argument in a community like Newcastle, and I can understand that demonstrating a link might be more difficult, but I think the evidence there is fairly conclusive also. But I am staggered that you would make an argument that, in some of these communities, with open-cut coalmines, with the pictures we have seen, with the documented evidence of the number of exceedences that have occurred over the last year, your industry is not a major contributing factor. What I was hoping we were going to get to is: what is being done to try to control it? We have had these arguments before with other industries, but I did not think we were actually having a discussion about the contribution of the industry to P_{2.5} pollution.

Mr McCombe: With due respect, we have not made a point in our submissions that we are not a contributor. We have not made that point. We have talked about context, as I have said. We referred to the fact that the majority of our emissions are PM₁₀. That is fine. We also talk about a proportion of those emissions and whether

it is significant, whether it be about a quarter, that it obviously arises from the combustion of diesel as part of operating a mine. We refer to that in our submission; that is acknowledged. We are not concealing our emissions here. What Ronan was saying was that we need to look at it in context. What is the risk of the monitoring location in terms of the population of the risk?

A lot of very good work is currently being undertaken. As an industry we want to get to the bottom of these questions as well. There is nothing to hide here. We want to get to the bottom of these issues as well. We want to work with government, we want to work with communities and we want to understand what is the nature of the particle emissions at some of these sites. What can we do to better manage them? That is where we are driving and that is where we want to go. A lot of really good work is currently being undertaken on just trying to gain an understanding of emissions in particular around the Hunter. I believe my colleague Arti included some of those in the New South Wales Minerals Council submission. It is an evolving field. It is a work in progress. Let the science be done. That is fine and let us respond to it in a managed, measured way. We really need to do that.

Senator DI NATALE: Absolutely. No-one is suggesting that we respond to this in an unmanaged way. I am not suggesting we do not follow the science. I am somebody who has a background in science and who is very keen to respect the science. I do not want to focus anymore on this question of whether the industry is responsible for PM_{2.5} emissions because I think that is self-evident. You mentioned risk as one issue. I agree: we need to quantify the level of risk here. I think the evidence internationally is very clear on the link between PM_{2.5} emissions and a whole range of adverse health outcomes. One thing you say in your submission, though, which intrigued me, is:

- Measurement and monitoring techniques need to be consistent and appropriate for Australian conditions. This includes the unique Australian environment and the contemporary operation of Australian Industry.

Again, I am not sure what that means. A dust particle coming from a coalmine in Australia has the same impact as a dust particle coming from a coalmine in China.

Mr McCombe: Sure.

Senator DI NATALE: The health impacts are the same. What is it that is so unique about this industry that means it should not be subject to the same sorts of regulation that we have internationally?

Mr McCombe: Thank you for the question. We are by no means suggesting that we should not be subject to a stringent or more stringent regulation as that applied internationally. By no means are we suggesting that and by no means has it been suggested in our submission. Are you referring to page 3?

Senator DI NATALE: Yes. I want to know what you mean by that.

Mr McCombe: Essentially, this issue really revolves around some of the health based studies. The difficulty in translating international health based studies in regions that are not the Hunter Valley, are not Newcastle, Sydney, Wagga Wagga, wherever the emissions are—for example, maybe from the US, Germany, South Africa or wherever—and translating the health impacts from a coal region on the other side of the planet to the Hunter Valley is that it is quite a different environment. For example, the Appalachians take the tops off mountains. We certainly do not do that here. I am not drawing conclusions about health here, but health is much bigger than just simply: mining equals a health impact. It is about mining in the socioeconomic context, mining done this way, mining in this regulatory environment; it is about fit-for-purpose analysis of the state of play that you are analysing.

Senator DI NATALE: That has not really helped me much. What I am saying is that we have an open-cut coalmine in China. We have some evidence that an open-cut coalmine in China produces this health impact. We can control for all sorts of variables: smoking, socioeconomic status and so on. That is what science allows us to do—to control for potentially confounding variables. Why is it that Australia is unique in this context? I still do not get it.

Ms Brown: Senator, if I may: I think the work done by New South Wales Health, through their Air Pollution Expert Advisory Committee, comes into play very strongly here. If everything were directly transferable and the environment we operated in were exactly the same as another internationally then I think that would be recognised by the state agency and that information could be immediately transferred across to New South Wales. But that expert advisory committee that has very esteemed colleagues from the science environment on it has made it clear that in New South Wales there are unique operating conditions. Weather is a significant part of that. For example, wind direction in the Hunter Valley is very complex. And that is something that the Air Pollution Expert Advisory Committee has made it clear they need to take into consideration when applying, investigating or reviewing any literature from overseas. I think the idea of transferability is one, unfortunately, that is not given

due time. New South Wales Health has appropriately allocated resources to ensure that any health based information or facts that are stated are relevant to the New South Wales environment.

Mr McCombe: There is obviously a lot of good science that needs to be done that is location-specific. We would certainly advocate for the progression of that good work, which is ongoing.

Senator STEPHENS: Thank you; that is a perfect segue into where I want to take the discussion, which is really why we are here in the Hunter. This is a national inquiry. Mr Kellaghan, I found your additional report quite helpful in trying to understand the national landscape. Mr Wagner, would you care to comment on the way in which these issues are dealt with in other jurisdictions, particularly given the growth of mining in Western Australia. Perhaps you can make a comment about the performance of EPA equivalents in other states.

Mr Wagner: I think the reality of what we are seeing as a national development of the industry is that we are finding issues of concern that are very locationally specific in each of these as well. A lot of the state based jurisdictions, whether it be from an environment or a health perspective, are all faced with the same concerns. We as an industry are trying to play a very active part within that by supporting science, by supporting the research that is being done, by assisting with the ongoing monitoring, by assisting with the ongoing practice changes that we have and trying to contextual exactly what our responses are going to be across a variety of industries and a variety of environments, looking at a variety of particular matters, because this obviously is not just an issue personified by coalmining; it is an issue that is across an invasive industry of minerals extraction. So I think that whilst it obviously is very much a litmus test of the area we are in right now as far as responses from community, industry and government, you would find impacts on very similar concerns but also very similar opportunities of the sector working with those to try to get a degree of responsiveness at this point in time.

Senator STEPHENS: Mr Kellaghan, do you have any comment to make? I did find your report quite interesting given the perspectives of the Queensland government and the Western Australian governments. I wonder if you want to make any other observations about the challenges of those two big mining states as well.

Mr Kellaghan: I guess there is a little bit of a distinction or a difference in New South Wales, because you have got mining and populated communities in quite close proximity. You do not necessarily have the same challenges in WA.

CHAIR: You do in Collie; I am from WA, so I know.

Mr Kellaghan: And you also do in port areas. So you have got the mines, which are in relatively remote areas, and you have quite significant buffer distances to residential areas—not everywhere, but generally.

In port areas it is different. Port Hedland is an example of where you have issues. Some of the stuff that they are doing in Port Hedland is that they have a real-time and proactive dust-management system, and it is a cooperative system. I do not know the correct term, but it is a collaboration of all industry in Port Hedland. It is a network of real-time monitors that are constantly sending data. They are forecasting a day in advance what the met conditions are going to do, and they use that information to try and get an idea of what is going to happen for the next day and try and put measures in place to mitigate any impact one day in advance. They also have a network of real-time instruments that are constantly feeding data so you can look at levels and, if levels are starting to increase in a particular area, they can try and put some measures in place. So I guess the challenges are a little bit different, but there are certainly parallels, and those sorts of systems are being implemented in the Hunter Valley as well.

Senator STEPHENS: Thank you.

Senator RHIANNON: Mr Wagner, in your opening remarks you talked about the industry investing in leading practices and the commitment of your organisation to improve performances. In that context, what is your response to the fact that, with the national PM2.5 standards, there are no standards for the operation of machinery off-road, such as in the mines of companies that you represent? What is your approach there? What are you doing about it and advocating?

Mr Wagner: Before I pass on to my colleagues, I will make a comment in regard to our commitment to our social licence to operate. Every single member company of the Minerals Council of Australia—which represents, from cradle to grave, almost the entire mineral sector, with 85 per cent of the production of minerals across Australia—signs on to what we call our Enduring Value mechanism, which is our Australian Minerals Industry Framework for Sustainable Development. Part of that will always be the fact that they are not only operating in their environment to their best ability but also looking for any potential opportunity to operate in a better way. So, in itself, this issue falls to the nexus or the crux of that Enduring Value mechanism, which is that we will always try not only to work to the sustainable benefit of what we are doing but also to move towards more sustainable outcomes not just as the regulatory frameworks improve but also as the opportunities scientifically improve what

we can and cannot do. But for a more sustainable locational issue, Arti, do you want to talk about some of the stuff that has been going in New South Wales in particular?

Ms Brown: Certainly. From a New South Wales perspective, we understand the Environment Protection Authority has decided to give some focus to non-road diesel emission from a variety of sources: rail, port and coalmining operations and mining operations generally. The New South Wales Minerals Council and the mining industry are fully cooperating with the EPA to better understand PM2.5 emissions from diesel. The industry, through the Australian Coal Association Research Program—which is a well-established research program—is also commissioning pieces of work to invest in technologies that reduce emissions from diesel equipment on site.

Senator RHIANNON: So you support standards for PM2.5s applying to machinery that is off-road?

Ms Brown: Industry supports finding better ways to manage emissions and reduce emissions where possible.

Senator DI NATALE: But the question was about national standards. Do you support national standards?

Ms Brown: I cannot comment on national standards.

Senator DI NATALE: Can anybody comment on national standards?

Senator RHIANNON: Could Mr Wagner, as the national representative of the organisation?

Mr Wagner: As with the development of any national standard, the national standard would have to be done with appropriate consultation mechanisms and would need to look at what all the evidence was as to putting that standard forward. As the Minerals Council, we would certainly welcome the opportunity to have ongoing consultation and negotiation of those standards, but the reality is that, when a regulatory framework is put in place, we as an industry will comply with that regulatory framework.

Senator RHIANNON: I think many would take that as meaning that you do not see that it is possible at the moment. But, to ask the question in another way, do you agree that there should be similar standards applying to off-road and on-road machinery?

Mr Wagner: There is always a lot of vagaries in any discussion around the application of on-road versus off-road emissions controls. You only have to look at something as simplistic as diesel fuel excise—if you can call it simplistic. The reality of standards, as I mentioned, will lead to ultimately our seeing what those standards are going to be, whether or not we can actually come up with a commensurate framework that is applicable across the environment if there is to be a national standard. The control of things of a mechanical nature operating in an environment like here, as we have discussed, versus an operating environment in the North-West of Western Australia could be a very different concern so I would think understanding what that standard would be is going to become fairly important before we as an industry can sign on or even participate in the communication or consultation mechanism.

Senator RHIANNON: Thank you, Mr Wagner. When you were responding then you talked about your commitment to operate in a better way. I want to take you to page 10 although this might actually be the New South Wales submission. No, it is yours. Under the paragraph about Xstrata Coal it says these pieces of research indicate that coaldust emissions from the surface of loaded coal wagons are unlikely to be a source of coaldust and covering coal wagons would not have any significant effect on air quality. So that is a brief summary of that paragraph. Elsewhere, and I am sorry as at the moment I have lost the reference, you have commented on the ARTC report suggesting that there is no difference between levels of pollution from coal wagons compared with passenger trains. Are you aware of that aspect of it?

Mr Wagner: Yes.

Senator RHIANNON: So I was wondering why you have made that conclusion from the ARTC report considering that on page 58 of their report, where they set out the various levels of pollution, they have the paragraph that says the statistical technique shows that all trains are a source of TSP and PM10 and PM2.5 on the rail network at Metford and loaded coal trains increase the concentration in the rail corridor by 7.1 particles for TSP. Then it goes on for the other particles. So if you read the whole section in the ARTC report you see they do set out that coal trains contribute greater levels of pollution. It seems as though the way you have interpreted it has been selective.

Ms Brown: Just to clarify that, that is from page 10 of the New South Wales Minerals Council submission, which is what you are referring to. I cannot comment on the technical nature of the ARTC report. However, I can comment on the initial findings that the Environmental Protection Authority made publicly available. It was their conclusion, and therefore the basis upon which we have made our comments that that initial pilot study was inconclusive and that, whilst there were variable readings, it was not significant enough statistically to draw any conclusions and that further work was required.

Senator RHIANNON: If it is inconclusive you have come up with quite an absolute position that covering coal wagons would not have any significant effect on air quality. You have gone to a very absolute position on that. In your response I would be interested in your elaborating on why coal trucks in the Illawarra are covered but coal wagons—and I understand coal wagons in Queensland are covered—are not covered in the Hunter. You are shaking your head, Mr Wagner?

Mr Wagner: Coal wagons in Queensland are not covered.

Senator RHIANNON: Okay. Well, we just have the inconsistency between coal trucks that are covered and coal rail wagons that are not covered. What is your approach to that?

Ms Brown: Sorry, Senator, but if I could break your question down into two parts, the first part being our comment in regard to covering of coal wagons in New South Wales, in our submission we have also referred to some initial work done by Xstrata Coal around wind tunnel testing. Those two pieces of information together, the results of which are included in our submission and publicly available, at this stage indicate that there is no benefit from an air quality perspective in covering coal wagons. The science could ultimately affect that outcome; however it is all inconclusive at this point in time. That is our position. In terms of the covering of coal trucks versus coal wagons, unfortunately I am not in a position to provide you with comment on that.

Senator RHIANNON: Would you be able to take that on notice?

Ms Brown: I can take that on notice.

Senator RHIANNON: I think, Mr Wagner, that when you were speaking you spoke about buffer zones. Why do your industry members put buffer zones around their open-cut mines?

Mr McCombe: There is a whole reason why buffer zones are created around mines. Obviously, dust could be one of those reasons, and we talked about the fall-out of coarse particles and we talked about visual amenity—often a reason why buffer zones are created around mines—and there are health and safety reasons as well. So there is a whole swag of reasons behind the buffer zones.

Senator RHIANNON: You have given three reasons: visual amenity, dust, and occupational health and safety. With dust, are you seriously suggesting those screens? The buffer zones that I have seen are compounds of earth, trees and screens. Is that what you are referring to as buffer zones?

Mr McCombe: Apologies, Senator, no, we are talking about vegetated landscape around the outside of a coalmine—just a distance, effectively, between the mine and others.

Senator RHIANNON: The mounds of earth?

Mr McCombe: No, we are not talking about them; they have quite a different purpose. They might form part of the buffer zone, for example, as part of perhaps visual amenity—it is very much on a case-by-case basis—or there might be quite specifically health and safety reasons why you have that around the outside as well.

Senator RHIANNON: In terms of visual amenity, is that your language so that the public cannot actually see the extent of the mining and the extent of the dust rising up?

Mr McCombe: No, with respect, Senator. The mounds in particular may be to do with light pollution, for example, or noise pollution. I cannot see the mound being overly effective in terms of dust as such.

Senator RHIANNON: No, I did not think so either. So we have clarified that one; that is good. But they do block the public's view of the mines.

Mr McCombe: Yes, they would.

Senator RHIANNON: Is that a tactic that the companies employ in these areas where there are such vast areas of open-cut mines?

Mr McCombe: I would not describe that as a tactic exactly—that implies some sort of ulterior motive other than meeting the requirements around noise and light and people not wanting to see trucks driving up and down in a coalmine.

Mr Wagner: Indeed, Senator, there are a very large number of places across the nation where there are actually viewing platforms for the public to view the operations at those sites.

Mr McCombe: Yes. There may be examples in the Hunter, I guess.

Senator RHIANNON: We don't have a viewing platforms in the Hunter, do we?

Mr McCombe: I do not know.

Mr Wagner: I could not comment, I am sorry.

CHAIR: We have run out of time. There are a couple of questions for you on notice, if you could respond to those in two weeks. Thank you very much.

CLEUGH, Dr Helen, Deputy Chief, Commonwealth Scientific and Industrial Research Organisation

COPE, Dr Martin, Principal Research Scientist, Commonwealth Scientific and Industrial Research Organisation

GALBALLY, Dr Ian, Chief Research Scientist, Commonwealth Scientific and Industrial Research Organisation

HIBBERD, Dr Mark, Principal Research Scientist, Commonwealth Scientific and Industrial Research Organisation

JALALUDIN, Professor Bin, Centre for Air Quality and Health Research and Evaluation

MARKS, Professor Guy, Centre for Air Quality and Health Research and Evaluation

[12:23]

Evidence from Dr Cleugh, Dr Cope, Dr Galbally and Dr Hibberd was taken via teleconference—

CHAIR: I welcome representatives here from the Centre for Air Quality and Health Research and Evaluation and also representatives from the Commonwealth Scientific and Industrial Research Organisation, who are joining us via teleconference. I remind the witnesses who are officers of the Commonwealth that the Senate has resolved that an officer of a department of the Commonwealth or of a state shall not be asked to give opinions on matters of policy and shall be given reasonable opportunity to refer questions asked of the officer to superior officers or to a minister. This resolution prohibits only questions asking for opinions on matters of policy and does not preclude questions asking for explanations of policies or factual questions about when and how policies were adopted. I understand information on parliamentary privilege and the protection of witnesses and evidence has been provided to all the witnesses. I invite each of the organisations to make an opening statement.

Prof. Marks: Senators, thank you for inviting us to appear before you. You have our submission. We are a centre of research excellence, funded by the National Health and Medical Research Council, with the aim of promoting and enabling research on the health effects of air quality in Australia. We are a collaboration of scientists from various disciplines and from several states. Our mission is to promote research and promote the translation of research into policy and into practice—in this case, into policy. Our submission to you attempted to address the terms of reference that were set out. I will not go through all of that in great detail. In our submission we address some information about particulate matter, its sources and particularly its health effects. We address issues around susceptible populations and describe some of the evidence that comes specifically from Australia about air pollutant health effects.

What I would like to draw out a bit and focus on from our submission relates to term of reference (c): the standards, monitoring and regulation of air quality at all levels of government. The current model of air pollution control in Australia, as we understand it, is based on the principle of identifying apparently safe thresholds for specific hazardous air pollutants and setting these as air quality targets, and, having done that, regulating sources of these pollutants in an attempt to achieve these targets. We would submit that this is not necessarily the best approach. Unfortunately, there is no safe level of exposure to air pollutants. Available evidence suggests that, at least for particulates and also for nitrogen dioxide, there is a linear dose-response relationship—in other words, a straight line dose-response relationship over a very wide range of exposure measurements. This means that, even at levels that are below the current targets or thresholds, there are health gains that can be achieved by further reductions.

The current model of air pollution regulation, which sets targets and regulates to these targets, does not in fact encourage emission reductions below those target levels and therefore would not achieve those health gains which are available. Another limitation of the current emission control regime is that there is no systematic measurement of pollutants other than those for which targets have been set. In fact, most of the evidence about adverse health effects of air pollutants comes from systematic measurements of air pollutions, and that data is used for epidemiological studies. In the absence of those measurements, it is never going to be possible to undertake the epidemiological analyses that are necessary to establish targets and establish dose-response relationships. This particularly relates to ultrafine particles, which are not currently measured in any systematic way across Australia.

Finally, we note that the current regulatory framework has important gaps in the range of sources that can be adequately controlled. For example, while transport related emissions can be controlled by state and territory agencies responsible for registering motor vehicles, no such agency exists to control the emissions of off-road diesel engines, which are an important source of particulates.

Based on those observations and some others that are in the submission we made to you, we have made a number of recommendations for the committee's consideration. First of all we would suggest that a regulatory framework for emissions controls should be established so that it encompasses all of the major emissions sources, not just those that are currently regulated. Second, priority should be given to interventions that reduce exposures for large populations that are most at risk and where the greatest health gains are to be made. Third, urban planning frameworks should incorporate consideration of air quality and health impact in decisions. An example of that would be that we should take steps to minimise exposure of residential areas to major transport corridors by either how we plan the major transport corridors or how we plan the residential areas, but they should not be planned to be in the same place or in close proximity. Fourth, a broader range of pollutants should be measured. This specifically relates to ultrafine particles, which should be measured so that we can establish the dose-response relationships that are necessary to collect information and lead to evidence that would underpin further action. We also would support the change of the current NEPM for PM2.5 from advisory to an established NEPM. Fifth, consideration should be given to moving beyond the current threshold based approach to regulation of air quality—which, by the way, is largely based on a model that is borrowed from other regulatory frameworks: occupational and toxicological frameworks.

We should perhaps move beyond that toxicological framework for the regulation of air quality to a regulation approach which is incremental, in which targets are set at specified increments above the background levels—because there are background levels for all these things—and which has a continual improvement approach in which emissions are regulated with the intention of achieving the lowest possible pollutant levels.

I will finish at that point.

CHAIR: Thank you. Who is speaking on behalf of CSIRO?

Dr Cleugh: I will speak for CSIRO. We welcome the opportunity to provide input to this committee for your inquiry on the impact on health of air quality in Australia. I would like to start by thanking the committee for enabling us to appear via teleconference. I will talk in my opening statement a little bit about CSIRO's role and our submission.

As part of our role as the national research agency CSIRO has world-class capabilities in air pollution science, and we undertake research into measuring air pollutants, their precursors and the chemical transformations in Australia's atmospheric environments. We also undertake research and model the chemical transformation, transport and mixing of these pollutants in urban and rural environments. We also do research into projecting the likely impacts of air pollutants under current and future climate.

Our research into air quality includes Australia's cities, industrial towns and rural areas indoors and outdoors. An important point of our research is that it extends beyond cities, towns and industries; our research is regional and national in scope. We undertake studies into the factors that influence and control the emission, transport, mixing and transformation of air pollutants, and that includes particulate matter. We work very closely with Australian government agencies state and federal to provide the research that is needed to underpin and inform the setting of environmental standards, the monitoring and regulation of air quality and also research that feeds into state-of-environment reporting.

To undertake these tasks of research CSIRO have developed a range of sophisticated tools, both in the measurement space and in the modelling space to support public and private sector agencies, industry and consultants. An important point from our perspective is that our expertise is primarily in air pollution science and we collaborate with other research agencies who have the relevant expertise and capabilities to look into and investigate health impacts of air quality. They include universities, consultants, industry, the Australian government and national and international programs. A good example of that is the Centre for Air quality and health Research and evaluation, who are sitting here on the panel with us today. We have collaborated on projects with them in the past.

To give you a sense of the kind of work we do, we have in recent times worked and currently work across all states in Australia and in the Northern Territory and with the federal government. Some examples of this kind of work include exploring the impact of wood heaters on air quality in Launceston, Melbourne and Sydney; work in the Hunter Valley looking at air quality and exposure from a variety of sources; research into air quality and climate change in New South Wales and Victoria; research into smoke emissions and impacts from planned burning and bushfires in all states and the Northern Territory; work on indoor air quality across Tasmania, New South Wales and Victoria; and work on unflued heaters in New South Wales. This is not a comprehensive list; it is an example of some of the work that we have done across Australia. Our submission includes specific examples of this kind of research, including relevant references.

The point about our expertise in air pollution science is that our submission and our discussions today will focus on the pollutants that reduce air quality and what our research tells us about those sources and the properties that will influence human exposure and health. But, importantly, we cannot provide scientific expertise on health impacts. Our submission addresses all of the terms of reference and we summarise in the executive summary some of the issues that we think are important from an air quality perspective in Australia today. But, rather than going through these now, I welcome some questions from the committee to us so I will stop there.

CHAIR: Thank you.

Senator DI NATALE: Professor Marks or Professor Jalaludin, I might ask either of you a question around the standards. In your submission you focused particularly on some of the fine and ultrafine particles. What do you think of, firstly, the existing standard and moving around PM_{2.5} so that it becomes a compliance standard? Do you think that is an appropriate standard and do you think we should be looking at annual as well as daily monitoring and perhaps even hourly monitoring for acute exposures, given that some of that information has already been collected?

Prof. Marks: I do not have a definitive answer to that question, except to say that I do believe it should be a compliance standard and not an advisory standard. The reason I do not have a definite answer to that question is what I said in my introduction: that we are not talking about a level below which it is possible to say there are no health effects and above which there are clear-cut health effects. The effects of particulates and, for that matter, gaseous pollutants are greater with higher exposure and less with lower exposure. I am not opposed to setting the threshold; it is one part of a regulatory framework. But, in setting a threshold, there are a number of issues that need to be balanced, one of which is this linear dose response curve and where you want to be on that linear dose response curve. As to the question of whether or not we should be having long-term and short-term effects, for particulates in general there is evidence about daily, day-to-day variation in particulate exposures having adverse health effects and also about long-term health effects of their pollution exposure. So it does make sense from a health perspective to want to control both peaks and long-term exposure.

Senator DI NATALE: So what you are getting at really is that, while we might have the threshold, there should be existing targets as well that go beyond just an arbitrary cut-off. In fact, there might be low-hanging fruit there whereby we might be able to make some good health gains by reducing particulate matter beneath the threshold.

Prof. Marks: Exactly.

Senator DI NATALE: What about in terms of measurement? Are there significant margins of error when you are measuring these sorts of particulates? That is probably a very technical question.

Prof. Marks: That question is probably better addressed to our colleagues on the telephone at CSIRO. Just as they say they are not wanting to talk too much about health effects, we are not the measurement people.

Senator DI NATALE: Okay. Before I get onto the health effects and give it a bit of context, the other issue that you mentioned as a recommendation is priority for large populations. But we have heard about the issue that we have a series of small populations, all of whom add up to a significant number of people, who are being exposed to a significant number of breaches. It is a bit like the analogy with cancer—that individual rare cancers when looked at on their own are rare, but when you put them together they make up about half the number of cancers, and yet we tend to focus on the priority cancers because large numbers of people are affected with each of those. I suppose the question is: what do we do for those communities, who in aggregate make up a significant number of people, who are being exposed to regular breaches of the existing standards?

Prof. Jalaludin: That is a difficult question because, as you point out, if you have a very small community and that is it, then you may argue that there might be costs and benefits of trying to reduce air pollution to such low levels that there are not any effects, and so we may trade off some effects knowing that, in a very small population, we may only have one or two cases. If you are looking at asthma exacerbations, for example, you might only have one or two cases. But, as you rightly point out, if you have a large number of small communities, the science would suggest that, yes, in terms of equity they should not be exposed to high levels of air pollutants also. Ultimately it might come down to a political decision about the costs of trying to reduce air pollution to such low levels and what might be the benefits of it. If, for example, we are thinking of the Hunter Valley and the coalmines, what are the benefits in terms of employment and so on? That is a difficult decision to make, but I think we should not forget the issue around equity. Is it fair to let one community be exposed to high levels of air pollutants so that the larger population can benefit from that? That is a difficult issue. I do not think there is a right or wrong answer. I might leave it at that.

Senator DI NATALE: It is a value judgement?

Prof. Jalaludin: It is a value judgement. It is a judgement around the benefits and the costs and our society's values in terms of lifestyle and so on.

Senator DI NATALE: I suspect if you took a poll of this room you would probably get a pretty consistent answer.

To focus on the health impacts here, I notice on the first page of your submission we are talking about a burden of disease that is greater than, for example, the impacts of high cholesterol across the population. We are talking about a burden of disease that is more significant than physical inactivity, which is a surprise to me. We are talking about it being more significant than drug use, which most people regard as a significant problem. Could you talk a little bit to the sort of health impact we are seeing from particulate pollution.

Prof. Marks: Perhaps I should put this particular figure in the context and say that this is a global figure. This represents the global burden of risk factors. Of course, there is a huge variation between regions and countries. In fact, if you look at our region it has to be said that the burden of disease attributable to particulate pollution is substantially less. But, at a global level, particulate pollution and indoor air pollution are major issues. I have just come from Vietnam, where I do quite a bit of work, and I can tell you it does not take a lot of science to realise that particulate air pollution in Vietnam is a huge health issue.

It is still possible to estimate and to detect in health studies that are done in Australia adverse health effects associated with pollutants. In fact, the strongest association in Australia is seen with nitrogen dioxide pollution rather than with particulate pollution, although there are some signals—the data is mixed—on the effects of particulate pollution. It is somewhat surprising that there are such strong effects from nitrogen dioxide because really the levels of nitrogen dioxide in Australia by world standards are very low. Our take on that is that in fact it is not nitrogen dioxide that is directly causing the adverse effects, but that nitrogen dioxide is a strong marker for motor vehicles. It is strongly related to the presence of motor vehicles and motor vehicles are associated with a whole lot of other emissions, some of which are not measured, which gets back to this issue of me saying that not everything that is important is actually being measured. My take on that is that the observed association that we see in children's and in adult health with nitrogen dioxide is really a marker for adverse effects of things that are associated with motor vehicles. I have to say I cannot even be sure that it is due to emissions from motor vehicles. It may be something else associated with motor vehicles, but it is associated with being near traffic.

Senator DI NATALE: So like rubber or from tyres or—

Prof. Marks: Or noise or all sorts of other things. I guess it is more likely to be emissions, but I cannot say categorically that it is.

Prof. Jalaludin: I want to make a point to one of the comments you made earlier about air pollution and the burden of disease. The reason it is unexpected that, for example, drug use has a low burden of disease is that although air pollution effects might be small, the whole population is exposed. If you look at Sydney, you have four million or 4½ million people exposed to air pollution and so each small effect on each individual person adds up to a large burden—

Senator DI NATALE: A bit like salt in the diet, isn't it.

Prof. Jalaludin: it is exactly the same—whereas drug use is a risk factor in a much smaller population. The effects might be greater for that individual, but when you add them all up it still is not as large as air pollution. I think that is a factor we need to be aware of.

Senator DI NATALE: The issue about the cost of air pollution: I keep seeing this figure of more than \$4 billion in New South Wales. What is the national figure? Do we have one?

Prof. Jalaludin: There is no recent figure, but there is one in a report published about seven or eight years ago. They looked at the health cost of traffic-related air pollution in all of the six or seven capital cities. But, again, it was in the billions of dollars.

Senator DI NATALE: I think it would be safe to say that it would probably be in the tens of billions—would that be correct, do you think? If you have \$4 billion in New South Wales alone, it would be that sort of ballpark figure.

Prof. Jalaludin: It would be.

Senator DI NATALE: I have a question for CSIRO around the issue of measurement of particulate matter. I am interested in the margins of error when you are measuring particulate matter—I know this is an evolving science—and also the question of these ultra-fine particles, which you have not really talked about today, and what are measurement techniques like there. Are they accurate? Could you address that?

Dr Cleugh: Yes, we are happy to. I will defer to Ian Galbally, down in Melbourne. Ian, can you answer some questions about the measurements.

Dr Galbally: With regard to PM2.5, the advisory level is 25 micrograms per cubic metre and, for reference, with a properly conducted measurement in the field you would expect the limited detection of the precision of the system to be a fraction of a microgram per cubic metre. That is quite a reliable measurement. I have not seen a comparison for ultra-fine particles—these are particles less than 0.1 of a micron diameter—as to what the comparison and sensitivity of those instruments are, so I cannot answer that.

Senator RHIANNON: Professor Marks and Professor Jalaludin, I was interested in your submission. You talked about how, when you came to the Hunter Valley, there were multiple overlapping sources of air pollutants and named a lot of them and then concluded:

... making it difficult to apportion pollution to specific sources.

I was wondering if you could elaborate on how that can be developed. Is it a matter of doing the speciation, of looking at the dust, and, once we know the chemical composition, that could help identify where those particles come from? So the questions are about how it is done and whether it is being done.

Prof. Marks: What you said is exactly correct. There is particle speciation study which is being done. It is the way in which you can apportion sources to pollutants in the atmosphere. But, before you ask any more questions about that, the experts on that particle speciation and how that is done are actually the people on the phone.

Senator RHIANNON: Thank you again for clarifying that. To our CSIRO colleagues: could you elaborate on that? I am interested in the process itself but also whether it is something that is being implemented, because we find often when we have these discussions that we are told, 'Well, we don't know actually where it comes from,' so it is hard then to proceed on how you manage it, bring in standards and bring in limits. If you could elaborate on that, it would be appreciated.

Dr Cleugh: I will hand over to Mark Hibberd, in Melbourne, who can talk you through the steps that we would take.

Dr Hibberd: We were undertaking a study in Singleton and Muswellbrook during 2012, collecting samples of PM2.5 particles and analysing them both at CSIRO and at ANSTO. ANSTO does elemental analysis, so it detects about 25 different elements off the filters, and we analyse some of the chemistry of the filters, some soluble ions, tracers for wood smoke. That is actually looking at what is on the particles. Then we have to put that together to identify the sources. For example, we have a tracer for wood smoke, so that allows us to track that down. We can identify other sources like sea salt and soil, vehicle emissions, industrial emissions and mine emissions.

We use a technique called fingerprinting. It is really like identifying people through fingerprints. Each source has a range of different chemical species that are emitted, often in specific ratios or a range of ratios. By looking at them in the analysis of the filters that we have done, we can track back to sources. It is not perfect. Some combustion vehicles of different types can have some similar aspects in their fingerprints. Soil, for example, whether it is agricultural soil or overburden, can have very similar fingerprints, so it can be difficult to identify in detail the sources. So some uncertainty remains, but we have done these types of studies before and have good success in identifying the main sources and therefore putting bounds on what unknown sources might be contributing to total levels.

Senator RHIANNON: Just to understand the process a little bit more clearly: how much time does it take? Is it something that could be adapted to a mobile monitoring station? To what extent can it be rolled out so that it is in use in a fairly quick way within affected communities?

Dr Hibberd: It is not possible to do that in the field. The process that we have used in the past is to collect field samples and then take them back to the lab to analyse them. In this case, we had two different labs doing the analysis. That equipment—certainly the ANSTO part—is not mobile. For the analysis that we do, I think the equipment would be very expensive to have in an on-site analysis vehicle.

It is actually one of the problems with particles. In a gas, for example, you can measure carbon monoxide as a pollutant, so it is just carbon monoxide. It is really a problem because there are many different types of particles, different sizes, different chemical compositions, different solubilities, different washout rates and so on. It is a problem and our research has developed a number of analysis techniques, but in terms of mobile sampling to identify the characteristics, we are not there yet.

Senator RHIANNON: I was interested in your submission when you came to looking at the sources of the particles but I did not see any mention of coal. Could you elaborate on why that was not covered, please?

Dr Hibberd: Coal is difficult to analyse. We are actually working on a technique to distinguish, direct, the carbon in coal as opposed to the carbon formed through other combustion sources, but that is not at the level where it is easy to distinguish between the sources. Within particles you get coal dust, which is carbon, but when you combust fossil fuels you also get carbon. So, at the moment, we actually detect the total amount of carbon. We are working on isotopic analysis of that carbon to determine its source.

Senator RHIANNON: If you are aware of it, I imagine in your studies you keep an eye on international developments and where other countries are at with regard to their standards for particulate matter, PM10s and PM 2.5s, as well as a summary of those developments overseas?

Dr Cleugh: I will refer to my wise colleagues.

Dr Cope: I think there was a reasonable summary of some of that information in the New South Wales Environment Protection Authority submission. It is something that we follow, but we do not follow it directly.

Dr Cleugh: It is probably something that potentially New South Wales might be able to provide more specific information on rather than us.

Senator RHIANNON: Thank you.

CHAIR: Thank you, representatives of CSIRO, that is the end of our questioning.

Proceedings suspended from 12:58 to 13:49

HOWE, Dr Alice, Sustainability Manager, Lake Macquarie City Council

CHAIR: I welcome the representative of the Lake Macquarie City Council. I understand that information on parliamentary privilege and the protection of witnesses and evidence has been provided to you. We have your submission, thank you very much. I invite you to make an opening statement and then we will ask you some questions.

Dr Howe: Thank you for the opportunity. Lake Macquarie city, for those who are not familiar with it, is located immediately south of here. It is the fourth largest LGA by population in New South Wales and the 12th largest in the country. It has over 200,000 residents, and that population is both growing and ageing. The city is also home to Eraring Power Station and 11 mining operations. It is surrounded by coal-handling facilities at the port of Newcastle, just here; Vales Point Power Station to the south; and obviously the mining and power generation activities in the Upper Hunter to the north-west.

We have done some assessment of the health costs of air pollution for our city's population, and we estimate it at \$70 million per year in 2010 dollars. There are currently no independent air-quality-monitoring stations located within the city. The nearest long-term station is at Wallsend, which is in Newcastle, north of the city. Pleasingly, the EPA established a new station to the south, at Wyong, in December of last year, but it is difficult for us to determine what the ambient air quality is in the city, although we do understand that there are significant emissions from those power generation and other activities that I mentioned earlier.

To compensate for the fact that we do not have very good ambient air quality data, we have done some modelling. It was commissioned by council. It has included 282 industrial emission point sources, as well as some other diffuse sources of pollution. It modelled PM10, PM2.5, sulfur dioxide, nitrogen dioxide and volatile organic carbon compounds, and it is modelling exceedences of PM10, PM2.5 and sulfur dioxide at various locations around the city. We have provided nine recommendations to the inquiry, and in general terms they relate to improving the regulatory standards, particularly the NEPM guidelines for air quality; improving the capacity of local government to manage air quality impacts; and providing an opportunity to support local communities to adopt cleaner technologies and healthier lifestyles.

CHAIR: Thank you.

Senator DI NATALE: I am interested in, I think, No. 4 of your recommendations, where you mention that there is no network of air-quality-monitoring stations between Newcastle and Sydney. Are there any areas of particular interest where it would be helpful to have a monitoring station located?

Dr Howe: We have not been able to determine precisely where a monitoring location might be ideally located. We have the Eraring Power Station, and locating it too close to that, I think, would not—

Senator DI NATALE: Where is that, sorry?

Dr Howe: Eraring.

Senator DI NATALE: I am from Victoria, so you will have to explain some of these places.

Dr Howe: The Lake Macquarie LGA is about 787 square kilometres, immediately to the south. It has a 110-square-kilometre lake smack bang in the middle of it. On the western shores of the lake is the Eraring Power Station. I think it generates something of the order of 80 per cent of New South Wales's electricity. I do not quite know the figure; it is a lot. Immediately in the vicinity of that power station, we have quite significant exceedences of sulfur dioxide and particulate matter. Locating a gauge and monitoring station right near there would not give us a representative sample of ambient air quality within the city, so we would require further discussion with the EPA in New South Wales in relation to an appropriate location. It is pleasing that we now have one to the south as well as to the north, so we can get a much better handle. But previously, before December of last year, the results of our modelling had not been able to be validated against a broader suite of monitoring stations, because they have all been located to the north or the north-west.

Senator DI NATALE: Have you made direct approaches to the EPA?

Dr Howe: Yes, we have.

Senator DI NATALE: What sort of response do you get? What is their response to this?

Dr Howe: The EPA has been very focused on issues around the port of Newcastle lately. There has been a substantial expansion of the air-quality-monitoring network in the Upper Hunter and in the port of Newcastle. The EPA has recently established one at Wyong, immediately to the south, but to date the EPA has not seen fit to establish a monitoring station within our city.

Senator DI NATALE: A lot of the focus has been on coalmining and transport—the port and so on. We have not had any submissions that addressed the issue of combustion, which presents a different profile of emissions. Do you have any more information about what that profile looks like compared to, perhaps, what people in Newcastle at the port might be exposed to?

Dr Howe: Our *State of the environment* report estimates that 50 per cent of the emissions to air in relation to particulates come from the power stations in our city, so it is a substantial contributor to particulate matter pollution within the city.

Senator RHIANNON: Is that just in Lake Macquarie?

Dr Howe: That is in Lake Macquarie. I can refer senators to a web link to our *State of the environment* report if you are interested in the specifics. I can quote from it. The National Pollutant Inventory data is a bit old—it is from 2003—but it suggests that 51 per cent of PM emissions are from electricity generation; 92.6 per cent of nitrous oxides and 99.83 per cent of sulphur dioxide come from power generation within our city.

Senator DI NATALE: One of your other recommendations talks about an increased role for local government. What do you see as the role of local government in this area?

Dr Howe: As I mentioned, we have conducted some modelling data for our city. We would prefer to have monitoring data. We have included the model of emissions in our development control plan. We have identified areas where there is a potential for exceedances of air quality goals and, where we have development applications that generate emissions to air, we have asked those applicants to consider how they will manage the cumulative impacts of air quality emissions in those locations. We use it as part of our planning instruments, in terms of where we locate future land release areas. We use it as part of our development assessment and we also use it as part of our community engagement activities, in making sure our communities are aware of the options to minimise their exposure.

Senator DI NATALE: You need to have some reasonably good localised information to be able to make those decisions. How do you make those decisions in the absence of that information?

Dr Howe: Through modelling data. We have had some models developed and we have engaged specialist consultants to do that work for us. We have taken the National Pollutant Inventory data. We are currently updating that with the new EPA emissions inventory that has been compiled from the National Pollutant Inventory and other sources. We calibrated that to the best available monitoring gauge, which is not ideal for our city because it is, as I said, located in the north. With the longer term dataset being available in the future from Wyong to the south, that will improve the calibration of our model, but it is the best we have available and our view is that it is better than nothing.

Senator DI NATALE: Presumably, if you had a range of monitoring sites in real time, based on the existing standards, it would help you through the development application process. What sorts of developments are we talking about?

Dr Howe: In New South Wales, the majority of the larger developments are assessed by the Minister for Planning, or the Department of Planning, the Planning Assessment Commission or the Joint Regional Planning Panel. Councils are left pretty much with the middle ground. I think the threshold is \$5 million to \$10 million.

Senator DI NATALE: So anything outside of that is essentially put in the hands of the planning minister in New South Wales?

Dr Howe: Or the Joint Regional Planning Panel.

Senator DI NATALE: At the larger end of the application process, what sorts of industries would we be talking about that might be captured?

Dr Howe: I will give you examples of the industries that are licensed currently within the city. There are power generators, mining operations, some food manufacturing companies, garden product suppliers, sewerage treatment systems, quarries and landfill. Those are the sorts of developments that are currently licensed in the city.

Senator DI NATALE: In terms of a response, if we are getting regular breaches of the existing standards, what are the options? We heard about some of the potential options in terms of coalmining. The EPA would argue that it is a work in progress. What are the options in power generation? What can we do if there are regular breaches? It seems to me that it is a bit more difficult to manage that issue.

Dr Howe: Certainly the power stations in the vicinity of our city are old. We would support transition to renewable technologies. We made it clear in our submission that we think there is opportunity to invest in clean technology across the city. I acknowledge the work that our power stations have been doing in reducing their

emissions. We are working actively with them to assist them to do that, in partnership with the Office of Environment and Heritage and the Environment Protection Authority.

Senator RHIANNON: You have the Eraring and Vales Point power stations in your LGA. We have not touched so much on the pollution from power stations, so I would be interested in what work the council has done in terms of any further detail about the levels of pollution and the types of pollution coming from those power stations.

Dr Howe: The modelling work that I mentioned looks specifically at a number of criteria and pollutants, and it indicates that there are quite significant exceedences of sulfur dioxide in particular around the Eraring Power Station. Vales Point is actually located immediately to the south of our LGA. We are fortunate in that we previously had a third power station, Munmorah, which has been placed into care and maintenance and has been replaced by a gas-fired peaking plant.

Senator RHIANNON: Apart from sulfur dioxide, have any other pollutants been identified?

Dr Howe: Yes, PM10 and PM2.5 primarily.

Senator RHIANNON: And the identity? Are there any more specifics about that particulate matter?

Dr Howe: No. Council does not regulate the power stations. They are regulated by the EPA. There are a number of environment protection licence conditions that relate to emissions to air, but, of the 36 licensed premises within the city, only eight of them have air quality monitoring requirements and, of those, only four are high-volume air samplers that would measure PM10. As far as I am aware, there has not been any composition analysis done on those data.

Senator RHIANNON: Considering some of the sources of the pollution, the mines and sometimes the power stations as well, where it is known that they exceed their conditions, is that something that the council take up where they become aware, either from complaints from the public or through their own work, that the conditions that these power stations and mines are supposed to operate under are not followed? Do the council ever put in their own comments or complaints?

Dr Howe: No, we get very few reports from our residents and ratepayers in relation to exceedences from the mines. Typically, people are interested in barking dogs. Those are our largest complaints in relations to emissions to air, I suppose! We do work with the power stations. As I mentioned, we facilitate a carbon dioxide emissions reduction program with them through our partnership with the Environment Protection Authority, and we have a program to develop in the next financial year an air quality reference group with key emitters to air to look at how we can better collaborate on reducing emissions throughout the city.

Senator RHIANNON: In your opening remarks you talked about the desire of the council for there to be an improvement in the regulatory standards. I would be interested in your elaborating on how Lake Macquarie council would then utilise those changes.

Dr Howe: At the moment we rely on the EPA's air quality assessment guidelines. What we are suggesting here is that providing a nationally consistent framework would be helpful, particularly for trans-state based organisations, so that there is some consistency in what is acceptable. I also think part of the issue for somewhere like Lake Macquarie is that a number of the development consents and associated environment protection licences are very old, so the conditions that were attached to them at the time would, by today's standards, be considered very lenient. I think there is an opportunity to try to pull older premises up to a higher standard, but our view would be that that is primarily the responsibility of the EPA.

Senator RHIANNON: Just sticking with what would be possible for councils to do, or how you could utilise such a regulatory framework, when you talked about the problems of the inconsistency and often its being too lenient, were you saying that you would envisage that a new regulatory system would have stricter provisions that you would be able to enact if problems were identified within your area?

Dr Howe: Particularly in relation to the finer particles, so at the moment we are applying a PM10 standard in our development assessment. PM2.5 is considered more of an advisory goal and there are no monitoring standards for the ultrafine particles at all. There is a lot of evidence to suggest that finer particles are really the major health risk to our communities, and having some clear guidance as to what standards are appropriate and what the cumulative threshold should be would be helpful. I think it would also be helpful to have some more stringent cumulative impact assessment criteria in the way that we assess developments, because often that is not adequately considered—what the existing ambient air quality is, particularly in a situation like ours where there is no monitoring data to establish exactly what it is.

Senator RHIANNON: Considering that you have, I think, 11 coalmines in your area—

Dr Howe: Eleven mining operations—

Senator RHIANNON: And you are obviously surrounded by mines, considering this area, and the two power stations. When you were giving those responses was that also recognising the need for there to be standards for off-road machinery?

Dr Howe: Certainly in terms of some of the environment protection licences that are issued, they do include road-based transportation activity, and we would be looking at that as part of an air quality assessment that was done for any new development, and that is included within the EPA's current guidelines.

Senator RHIANNON: I thought that, although it is included in the current guidelines, the standards do not actually apply to the off-road machinery. I thought that might have been a problem within a place like Lake Macquarie where you have such a large number of sources that can contribute considerable pollution.

Dr Howe: As far as I am aware, the air quality impact assessments that are done look at the sources of emissions. That would include those sorts of vehicular movements, and that is adding to an overall impact—envelope, if you like—from the development. But I am happy to provide further advice if you would like me to follow it up.

Senator RHIANNON: If you could, thank you. It was particularly about the standards and then enforcing those standards, and if that is something the council desired.

Dr Howe: Just to clarify on that, the majority of activities where off-road vehicular movements would be involved would be mining activities that are regulated by the state, so council would have a limited development assessment role in those activities.

Senator RHIANNON: True.

Senator DI NATALE: In terms of your submission, we are focusing very much on the immediate health impacts, and I think a lot of the focus has been on what can be done, particularly in coalmining communities, to mitigate against coal dust—given that mines exist and that there are communities that are affected today. But we have not really spoken much about what the long-term objectives should be in order to minimise the exposure to particulate matter in communities like yours and communities like those in Newcastle and throughout the Hunter. In your submission you talk about some long-term policy proposals that need to be considered—in particular the transition from fossil fuels to renewables. Can you give us an indication as to what sorts of things you think would be helpful as longer term policy levers to try to ensure that transition happens as quickly as possible?

Dr Howe: I am ever hopeful that the Clean Energy Future package will do what it was designed to do, which is to reduce overall greenhouse gas emissions for the country. We certainly support a land use planning framework that builds active transport, so that people are not as dependent on motor vehicles. In terms of renewable energy provision, we strongly support the local research hubs, particularly the CSIRO, and the opportunities for small-scale distributed solar power generation. We are also investigating community based renewable energy facilities. I think there is a lot of opportunity for the mines, in particular, that own large tracts of land within our city to look to establish things like large-scale solar facilities and, indeed, solar thermal technologies.

Senator DI NATALE: You talk a bit about some externalities that might prevent that from happening. So what are those externalities that you think are important to address?

Dr Howe: I think that the health costs of those sorts of activities—of power generation and mining—are not fully incorporated into the costs of those activities. Certainly the subsidisation of the mining and power generation industries—

Senator DI NATALE: So what sort of subsidies are you talking about?

Dr Howe: For example, fuel subsidies. We think there is an opportunity to provide more royalties from those activities back to local communities like ours.

Senator DI NATALE: Again, what do you mean by that?

Dr Howe: For example, we generate quite a significant amount of royalties for the New South Wales government. We, along with much of the Hunter, find that those moneys are not particularly equitably returned to a community like Lake Macquarie. I think there has been a lot of focus—and rightly so—on the Upper Hunter, but we have similar issues and tend to be forgotten.

Senator DI NATALE: Okay. It strikes me that in Victoria we have a situation where there is a lot of controversy around wind turbines. One particular concern that people have is the issue of bird strike. There is now a reporting framework. When birds are injured by wind turbines, that needs to be reported. Do you see that some sort of equivalent framework maybe should exist around coal fired power stations and the sort of impacts they are

having on human health? I think that would be an appropriate framework given that we are applying something like that when it comes to birds. Is there a role for local government to report back to communities about the sort of impacts that might be occurring as a result of coal fired power generation?

Dr Howe: I do not think that is the role of local government. I think it is the role of the appropriate regulatory authority, which in this case is the state of New South Wales. I think it would be advantageous if wind farms were assessed in the same light as coalmining and power generation activities; at this point it is harder to get a wind farm approved in New South Wales than it is a coalmine.

Senator DI NATALE: And why is that?

Dr Howe: For example, anyone within two kilometres of a proposal can object and have it vetoed. There are plenty of communities that are that close to a mining operation that do not have that same luxury.

Senator DI NATALE: Thank you for that.

CHAIR: I have a question about local government's engagement at a state and federal level in terms of the sorts of feedback that you have given us and also the very specific recommendations you have made, particularly to address the absence of the PM2.5 exceedence limit under NEPM rather than just being a guidance. What level of feedback to you get to provide that to the National Environment Protection Council, for example. Have you been enabled by your state processors to be able to provide that feedback?

Dr Howe: No. Up until this opportunity to provide a submission to the Senate inquiry, our liaison had been almost entirely with the New South Wales EPA. We have provided similar feedback to the New South Wales EPA but not directly to the council.

CHAIR: Do you have discussions with other local government through the Australian Local Government Association?

Dr Howe: Yes, we have some representation to ALGA—not specifically on this matter. We also have the Local Government Association of New South Wales and our regional organisation of councils, and it tends to be at the regional level that there is most discussion about the impacts of air pollution on local communities.

CHAIR: I am thinking coalmining and generation in WA, which has similar sorts of health impact. Would you have direct links with other councils that have similar sorts of issues to expertise, advise et cetera?

Dr Howe: On of topics we do, not particularly on this one. Climate change adaptation is one that Lake Macquarie has a very strong involvement in and we do have quite a lot of cross-state boundary communication as well as communication with various levels of government.

CHAIR: But not on the air pollution issue?

Dr Howe: Not so much on air pollution.

CHAIR: I think you have exhausted our questions. Thank you, very much; and we are just on time.

DOBSON, Ms Corinne, Senior Policy Officer, Australian Medical Association

HAMBLETON, Dr Steve, President, Australian Medical Association

[14:16]

Evidence was taken via teleconference—

CHAIR: I welcome representatives from the Australian Medical Association. I know that you are experienced at doing this, but I still have to ask whether you have been provided with information about parliamentary privilege under protection of witnesses and evidence.

Dr Hambleton: Yes, I have.

CHAIR: I invite either or both of you to make an opening statement and then we will ask you some questions.

Dr Hambleton: I would like to thank the committee for the invitation to address the committee and provide the opportunity to focus on an issue that has significant implications for human health. I would also like to apologise that I cannot appear in person. I thank you for your indulgence, which has made it a lot more convenient for me. Thank you, very much.

As the peak professional organisation representing the medical practitioners in Australia, the AMA supports the central objective of the national environmental protection measures, which is to ensure adequate protection of human health and wellbeing. We do not, however, believe that the current air quality standards, monitoring networks and air management policies in Australia are effectively meeting this objective. There is considerable evidence documenting the substantial health impacts of air pollution, which range from acute and chronic effects and reproductive and neurocognitive defects through to premature mortality. There is strong evidence of the significant health effects of particulate matter. The World Health Organization's most recent appraisal of current scientific evidence indicated that these effects are even more pronounced than was previously thought.

In the AMA's written submission to this inquiry we provided some clear recommendations to minimise the health impacts of air pollution. We urge governments to take prompt action to address gaps in current standards, monitoring frameworks and air quality management practices. Our concerns centre around three aspects of current air quality management. The first is the quality standards themselves, which includes the levels that are currently prescribed and the range of pollutants that are included in the standards, the second relates to the effectiveness of current air monitoring and the third issue concerns enforcement of standards. The AMA has concerns around each of these aspects of air-quality policy and management in Australia. The evidence supporting the health impacts of particulate matter is consistent and strong, yet there is no compliance standard for fine particulate matter—nor are there any standards or monitoring guidelines for ultrafine particles. Occupational and workplace standards for hazardous air pollution are inconsistent and poorly enforced and major sources of hazardous air pollutants are not currently regulated, as indicated by the lack of standards for off-road diesel engines.

The current monitoring network needs to be strengthened and expanded to measure the exposure of vulnerable groups and populations living in close proximity to major air sources of air pollution such as coal-fired power stations or major roadways. More effective enforcement mechanisms are also required to ensure that the standards are met and the overall goal of air-quality management should be to minimise exposure to air pollution—that is 'minimise' rather than go under a certain level.

Ultimately, the AMA recognises that compliance with air-quality standards alone is not enough to protect public health, because there is no known safe level of exposure to air pollutants such as ozone or particulates. Exposure to levels below the current standard poses risks to human health. In addition to strengthening air-quality standards and monitoring, the health impacts of air pollution need to be more effectively factored into planning and development decisions. Thank you for allowing me to make an opening statement.

Senator DI NATALE: Thank you very much for your opening statement and your submission. I would like to start with the issue of standards. We heard a presentation earlier from, I think, the Minerals Council, that suggested that Australia has a very tough regime when it comes to setting standards. In your submission you say we lag behind international standards. Can you just speak to that?

Dr Hambleton: I think the reality is that, over the last two decades, we have had an improvement in air quality in Australia. But we have really had an increase in mining and road transport, and we have actually had climate change and extreme weather which has affected it.

Getting to your specific question: we do not have standards in this country on the ultrafine particles, which are the ones that penetrate deeply into the lung. In fact, for fine particles there is no known lower limit of exposure—to particles with a diameter less than 2.5 microns. The WHO have revised down their recommended level for air-

quality standards. The United States Environmental Protection Authority has similarly revised its air-quality standards to lower the threshold for particulate matter to that 2.5 micron level. So that is the measure that we measure at today. We do not measure the ultrafine particles. There is certainly growing attention by researchers that suggest these are particularly harmful—and, again, there is no lower limit. So we need to look at our standards; we need to lower the targets. The reality is, as I said in my introduction, it is all about minimising exposure, not beating a standard.

Senator DI NATALE: Yes, I think we have heard that statement made before—that, in fact, the objective should be reducing to as low as possible rather than some arbitrary level. With regards to PN2.5, I note in your submission you talk about the 'acute health impacts' along with 'chronic' exposure. Would you suggest that there is a good reason to implement both a 24-hour and hourly monitoring of PN2.5 along with the average yearly exposure?

Dr Hambleton: I think the short answer is yes. Damage occurring because of particles is about cumulative exposure over a period of time, but also levels of short-term exposure are an issue—and, further to that, isolated pockets of high exposure. So we need to be measuring not averages in the community; we need to know where particular hotspots are, if you like. Is it very close to a factory? Is it near a major road? Is it a particular geographical feature, a valley for example, that does not provide winds to dilute the particles? Are their times of the year when we should be taking specific notice of the particulate levels? So we do need to have ongoing monitoring. Further to that, we need to tell people and we need to have strategies in place when the monitoring shows that the particulate levels are actually rising—what do you do if you are asthmatic; what do you do if you live in the area? Do you stay inside; do you shut the doors; is it better to have filtered air, air conditioning? What are the strategies that we should put in place? Not only should we monitor; we should tell people.

Senator DI NATALE: That has been, for me, one of the biggest surprises, in that the approach appears to be to try and capture some sort of notional representative population group. It seems to me that, through the current monitoring, as you suggest, we are not monitoring areas where the risk is clearly higher. By 'hot spots', I assume you mean groups of people living alongside coal fired power stations or people living near a busy highway or a rail corridor where there is regular coal transport. Is that the sort of monitoring you are talking about?

Dr Hambleton: Yes, it is. I must say I do need to be careful with language, because I certainly want to talk about the impact of climate change as well, so areas where there are likely heavy burdens of particles are something that we need to look at. Also, we need to look at other areas where there are higher risks. They are where there are particular population groups that, with the same exposure, will get a more profound effect. I am thinking of low socio-demographic areas, where perhaps housing prices are cheaper so people who live there are of a low socio-demographic group. They are the same groups that have increased burdens of chronic disease, whether it be Aboriginal and Torres Strait Islander Australians who might live near mining areas or maybe live in the same areas, because of their financial status—but those groups with the same levels of exposure would be at increased risk of complications because of their background medical status.

Ms Dobson: It is worth noting that the way the monitoring network has been designed and set up in Australia is at a contrast to the United States and also to Europe and to the guidelines that are recommended by the World Health Organization in terms of ensuring that monitoring captures that variability within a population, that it also does pick up areas of high risk where there are elevated levels of exposure and where there are people living there and likely to be exposed to higher levels of air pollutants—such as in close proximity to industrial causes of pollution or near major roadways. In terms of understanding what the health impacts of air pollution are, the current monitoring framework that we have is really not effective in providing that information that we need.

Senator DI NATALE: Thank you. Just to be clear on the point that you made, Dr Hambleton, you are suggesting that there is an association between people who are poorer and chronic disease and therefore those people are at higher risk of adverse outcomes when they are exposed to air pollution. Is that correct?

Dr Hambleton: That is right, absolutely. They often have the higher burden of chronic disease and they will be at increased risk from the same level of air pollution. They also are often located in areas where there are higher levels of pollution in the first place.

Senator DI NATALE: You also mention in your submission the issue of no standards around diesel engines when they are off road, despite the fact that they are a major source of particulate pollution. The obvious answer to me there is that there needs to be a national standard for the non-road diesel sector. Is that something you would support?

Dr Hambleton: Yes, indeed. I would absolutely support it. We do have increasing standards for on-road diesel equipment. Often they are European standards that we adopt in Australia, but the off-road applications—

there is a lot of diesel powered heavy equipment: forklifts, shifts, tractors, mining equipment, even rail construction, and, in particular, underground mines and workshops where those particulates and gases can accumulate if the ventilation is not what it should be. We know that diesel engine exhaust has now been reclassified by the WHO as a group 1 carcinogen, so it is very important that we focus on non-road diesels which are producing a significant amount of air pollution.

Senator DI NATALE: You mentioned climate change a little earlier and that it will increase the risk of adverse impacts from exposure to poor air quality. Can you explain that?

Dr Hambleton: There are a couple of effects. There is the direct effect of extreme weather events. We have talked about that in other fora. For example, heat waves and bushfires are linked. If we have a bushfire, we have an enormous number of large particles—the ones we can see. That certainly influences air quality. In Australia, while not measuring specifics and giving numbers, we already advise people if they are downwind of a bushfire to stay inside, close the doors and that people with asthma should take extra precautions. During drought conditions in Australia we see increases of dust storms, which also cause particulate pollution. They are direct effects. There is the plain heat effect. We know that ground level ozone is produced more commonly with high temperatures. We know that there are increased numbers of pollens, which might change with climate change. And clearly there are cardiovascular and respiratory effects. There are certainly direct and indirect effects of just plain heat in an extreme weather event.

Senator DI NATALE: Finally, I suppose the reason we are having this inquiry is because we are concerned about the health impacts. Perhaps in as simple language as possible, could you just explain why this is a serious health issue.

Dr Hambleton: Despite the fact that, as I said earlier, we have actually improved our air quality, we have a number of pollutants which we know we are being affected by. We talked about particulate matter. There are various sized particles. There are large particles that get into the nasal passages, smaller particles making their way into the lungs and ultrafine particles getting right down into the lungs and maybe worse. The direct effects there are respiratory tract infections, asthma and lung function decreases over time. But worse than that we are now seeing cardiorespiratory diseases and heart attacks. We are definitely seeing premature mortality and even adverse birth and neurodevelopmental outcomes. That is just from particles.

We also have ozone being produced. Based on vehicle emissions of hydrocarbon and oxides of nitrogen, again we are seeing direct respiratory effects—increased airway reactivity. Motor vehicle emissions produce oxides of nitrogen which causes asthma, eye irritation and a decrease in lung function. Sulphur dioxide caused by fossil fuel combustion causes asthma and throat irritation. Carbon monoxide, which again is a product of fossil fuel combustion, can actually lead to a reduction in the oxygen-carrying capacity of the blood. That is very, very subtle and can result in headaches, nausea and dizziness. Sadly, in high concentrations, it is directly life threatening.

Of course we have not spoken about other chemicals, such as lead, in dust or contaminating the ground. We know that children playing in areas around lead smelters will have higher leads levels. These are air-borne pollutants which make their way into the human body in one way or another.

Other things like asbestos, which would be suspended for a short period of time, I have not spoken about. There are a number of things about air quality that we need to know to measure and warn people about and provide that feedback in a fairly urgent and changing way.

Senator RHIANNON: In one of your recommendations you call for proactive alert systems. Could you provide more details on that? In the Hunter, people can sign up for SMS messages. Other measures have been discussed from time to time. So I was interested in the details you have about the systems that are needed.

Dr Hambleton: That is a very good example of a way of getting accurate information on the run. This is the sort of thing we need to have available more broadly. I draw the attention of the committee to the fact I was in Beijing, China, in February this year. The air quality there was, in their words, appalling. Beijing produces as much pollution as the whole of Great Britain. They regularly advised the citizens of Beijing that 'pollution is an issue today' and that if they did not have a reason to be outside, then they should not be out there today. They took active steps to try to reduce the pollution. While I was there, seventy factories were shut down to try to minimise the contribution to the air pollution. They took all the government fleet being used off the road to try to minimise the number of cars on the road. It is an extreme example. The example you gave in the Hunter is the sort of thing we need to know. The population needs to know what the number is, what the ranges are, what the implication is and what action should be taken to try to minimise exposure, whether it be staying inside cars with air-

conditioning on or staying inside houses with windows shut or whether it be a case of, 'Don't go out today. If you're going to go for a walk, perhaps don't go not until the pollution index falls.'

I guess I am speaking about hotspots—I am sorry to use that language—about areas where there is significant pollution that might be temporary because of an environmental condition or atmospheric condition or a wind direction. So, rather than the population not knowing, if it was measured, monitored and information supplied, people could minimise their exposure.

Senator RHIANNON: Thank you for that. It is a sad commentary, though, isn't it, that we may have to consider recommending that people live their lives like that. For me, it takes me back to one of your earlier recommendations where you make reference to climate change and air pollution. I am interested in whether, when you address that issue, you are looking to measures that will address climate change—and being in the Hunter I am thinking of the transition away from a reliance on coal-fired power to renewables as a long-term measure to address air pollution by looking to sources of air pollution and whether we can actually change the way we live our lives so we do have substantial reductions in air pollution. Are they some of the measures that you are alluding to?

Dr Hambleton: Certainly, with regard to the direct effects of a coal-fired power station and its contribution to air pollution, if an alternative source of fuel was found it would directly change the amount of particulate in the air. As the climate is changing we know that there are contributions from those direct effects, dust storms and also fires, to that content. So if we could reverse the climate change that was occurring, therefore it would make sense that we would be reducing the number of environmental pollutants because of those extreme weather events, which we would expect to actually return to a more normal level.

Ms Dobson: Perhaps another aspect of that is recognising that climate change is already affecting the weather, that we are having more increased heatwaves, bushfire events and so on. These are events that do impact on air quality. As Steve mentioned previously, we know that during hotter weather that the ozone production is amplified and that that has quite significant and measurable impacts in terms of people with respiratory illnesses and so on. Similarly, we have bushfire events, which produce large amounts of particulate matter which also can have quite significant impacts on health. So we need to ensure that not only are we trying to minimise and mitigate some of those factors but also in the planning that we are factoring in those things as well as ensuring we are doing the monitoring that we need to be doing to establish what the effects of these different climate change impacts are on human health and make the appropriate policy responses.

Senator STEPHENS: I just want to talk to you about page 11 of your submission where you go to the issue of air quality monitoring and health surveillance. You make some important points, saying that the current NEPM underestimates real-life exposures for many sections of the population. Your recommendation is an expansion of air quality monitoring. Can you explain to us the difference between the Australian, United States and EU systems?

Dr Hambleton: I guess it is the focus on whether we are looking for averaged levels that the population is exposed to or whether we are doing that in addition to saying, 'We know what the averages are, but we also know that there are vulnerable populations and vulnerable locations,' and in addition to the average numbers, we also need to look at the areas where the most harm is likely to be inflicted. I guess the biggest difference is that we avoid putting monitoring stations right next to a road or a factory, because we do not want to know what the peak load is; we want to know what the average load is, and that tells us what the population load is. And while that is quite accurate, there are some parts of the population that get virtually no load and are at very low risk, and there are some parts that, conversely, get more than their fair share. I suppose we need to think about where and how we monitor so that we get not only a picture of the average but also a picture of the distribution, because that is where the health effects are most likely going to occur.

Senator STEPHENS: Thank you for that. You also make the point on page 12 of your submission that Australia lacks a nationally consistent framework linking the health datasets with monitoring and prospective assessments of ambient air quality. How could that be introduced in Australia within the National Environmental Health Strategy, as you suggest?

Ms Dobson: One of the aspects of that that we probably would need to strengthen as a starting point is to make sure that we have got better monitoring and accurate and more comprehensive data on air quality. In terms of linking that to health surveillance, it is a matter of working across sectors and drawing that data together. At the moment there is data there; it is just not being linked together effectively.

Dr Hambleton: I will give you an example which is also difficult to measure; we are talking about climate change. When the ambient temperature goes over 37 degrees we can measure increased death rates in our

hospitals, but they are not heat stress or heatstroke; they are actually increased cardiovascular deaths, increased heart attacks, increased respiratory problems, increased levels of renal disease and renal failure. Similarly, if you had an understanding of the morbidity and mortality statistics and you could correlate that with areas of high pollution, you would get a much clearer picture that, when the ambient particulate matter number was above 400, there was an increased rate of admissions to a particular hospital from people sourced from a particular location. It is really about data mapping and correlating different datasets to actually give you some idea of the impacts. Similarly, if you then said, 'We now know that if the number goes above a certain level, we see increased admissions,' and there were a strategy to inform the population, saying, 'On these days when we tell you that the particulate matter is at a particularly high level, we want you to do the following: close your windows, stay indoors, avoid exposure,' and two days later, everything is fine, we would then be able to measure the impact of that advice to see whether we were being effective. I guess the intention of our submission is that we should be focusing on minimising exposure, not necessarily just getting under the average level.

Ms Dobson: Can I add as an important aspect of that that one of the issues that we have talked about previously relates to fine particulate matter and also ultrafine particulate matter, an issue of growing concern about which there is emerging evidence, but we need more evidence. At the moment we do not have standards relating to ultrafine particles, we do not have monitoring guidelines, so we are not actually collecting that data. It therefore makes it very difficult to look at the relationship between levels of those pollutants and the impacts on health. It is really important that that data is there so that we can inform our air management policies and regulations.

Senator STEPHENS: A final question from me, probably to take on notice. Can you advise the committee of any research projects that might be considering these issues in a microcosm or any kind of research that is being funded under the NHMRC or other research that could assist the committee in shaping recommendations? If you are aware of any other research, perhaps you could let the committee secretariat know.

Ms Dobson: We would be happy to take that question on notice. I think there is some research. Were there particular aspects or are you talking more broadly in relation to this area?

Senator STEPHENS: Anything you can tell us is happening would be helpful.

Ms Dobson: We are happy to take that on notice and I will forward to the committee any research that we have in relation to that area. As we point out in our submission, some of the standards and probably international best practice are happening overseas and particularly in Europe in relation to monitoring and things like developing effective health alert systems. I can also describe some of the materials in relation to that.

Senator STEPHENS: That would be helpful. Thank you.

CHAIR: If you are able to provide that within two weeks that would be great.

Ms Dobson: That should be fine.

CHAIR: Thank you both for your evidence this afternoon and thank you for putting up with the teleconference. I know it is much more difficult doing teleconference.

Dr Hambleton: And thank you for your indulgence in our being able to give evidence over the phone.

BURGESS, Ms Cathy, Spokesperson, Stockton Community Action Group

HAYES, Mr John, Co-convenor and Spokesman, Correct Planning and Consultation for Mayfield Group

SUTTON, Mr John, Private capacity

[14:47]

CHAIR: Welcome. You have been sitting here all day, so you know the routine by now. I understand that information on parliamentary privilege and protection of witnesses and evidence has been provided to you. We have your various submissions. Thank you. Have you worked out amongst yourselves who is going first?

Ms Burgess: The first thing I would like to say is to thank the senators for this inquiry. I am sure I am not speaking just from the residents of Newcastle but of the Hunter and of Australia. This is something we have desperately needed for a long time and we are very excited that you have come to Newcastle. You have got this map in front of you, and the reason that we have given you this is because we want to show you the suburbs the three of us are representing, three of the suburbs that are around the port. I am from Stockton, over on the beachside, we have got Mayfield but Tighes Hill is not actually shown there, but where Mayfield East is actually more Tighes Hill. We also have people here from Islington, which is also affected by this.

CHAIR: For a west coaster coming to the east, what distance are we talking about here?

Ms Burgess: One example is on this map. I am going to be talking about Orica, a particular facility. That facility is there. This is Walsh Point; this is one part. Do you want me to stand up and show you?

CHAIR: Yes. The light is shining on it; that's all. If you do it a little bit like that—it was just the angle; that's all.

Ms Burgess: Walsh Point is this part of Kooragang Island, and Orica is here. From that point, taking a radius of four kilometres there are 44,000 people that live in that area.

Senator DI NATALE: In terms of the distance from, say, Walsh Point to that small finger of land where Stockton is—

Ms Burgess: It is just the river, so it is 500 metres. So does that help?

CHAIR: Yes, it just helps me to visualise it.

Ms Burgess: Yes, it does help to have those visuals. That is why we brought these along: because it does give you a little bit of a better visual. I am going to talk specifically about a particular incident that happened in 2011. The reason why I am going to do that is so that you get an understanding of the kind of trauma that can occur because of toxic leaks. While that trauma occurred for Stockton—because it was Stockton that was affected—all of the other suburbs that are around the port felt that same trauma, because it was the way the wind was going that night.

We had hexavalent chromium leak over our suburb in August 2011 on one night. Orica, the company, decided during the night that, while it was a bad incident, it had not gone off site. I would also like to point out that they also did not contact WorkCover, and the hexavalent chromium went over their own staff. The next day, their boss arrived and realised that it was much worse than they originally thought. He immediately called in his big bosses. So they did that first; then they contacted EPA. We believe now that they contacted Sydney EPA, not Newcastle EPA—because Newcastle EPA knew nothing about it as well. They were told to contact the health department. That seems to have gone a little bit skew-whiff—no-one is really sure what happened there. The health department was not contacted until the day after.

The issue around that is that for two days nobody in Stockton or Newcastle knew what had happened. We had people in Stockton with nosebleeds, sore throats and running eyes. They were going to doctors and to the hospitals, and, of course, it could have been sinus or anything. Because the health department were not aware of it, they did not send out an alert to be looking for any symptoms. Two days later, we were notified. The reason why we know that EPA in Newcastle did not know about it is that we had a couple of our councillors who were notified both by staff at Orica and Stockton people that something had happened at Orica, but they did not know what. They then contacted Newcastle City Council and said, 'What's happened?' Newcastle council contacted EPA in Newcastle and the EPA said, 'Nothing's happened.' So Newcastle council could not enact their emergency plan, which they would have done. Newcastle council, along with the Stockton residents and the rest of Newcastle, found out in the media release two days later.

To add to the trauma—this is what people need to understand—for two days our kids were outside playing, and in particular there is a childcare centre there. The worst affected area was North Stockton. As you can see, it is very thin there. On the beach side of North Stockton there is a childcare centre. For two days that childcare centre

was open. We had two-year-olds, three-year-olds, four-year-olds and five-year-olds playing outside, eating dirt and whatever. We know what two-year-olds, three-year-olds and four-year-olds are like. The trauma of the owner of that childcare centre was absolutely palpable when she found out what had happened. She was apologising to the Stockton community. As soon as she found out, she closed down the childcare centre and she brought in people and paid for them to start cleaning down her site. As far as we can tell, the child-care centre was not affected, but we have had significant rain over those couple of days, so we do not know if it has been washed away and we do not know how much. Because the testing was not started straightaway, we do not know much landed on Stockton. All it is is little orange flecks; it is easy to miss. Everybody in Stockton can now tell you what it looks like, but because we were not looking for it we did realise. I think that gives you the effect of what can happen with air pollution. It is hopefully a one-off, but it gives you an idea of what can happen to individuals and what can happen to a community. And, as you can see, that could have happened to any of those portside suburbs in Newcastle.

I have a couple of things I want to bring up, but the next is that Orica makes ammonia nitrate for the mine. It currently makes 430,000 tonnes of ammonia nitrate per annum. We have been talking a bit about diesel. To turn that into explosives they need 60 litres of diesel per tonne of ammonia nitrate, so what we are talking about currently is 25,800,000 litres of diesel to make the 430,000 tonnes of ammonia nitrate into blasting bombs. They have got an increase of up to 750,000 tonnes of ammonia nitrate, and that equals 45 million litres of diesel. While we have been talking about the effects of diesel, it is important to understand that. Most of that is for the Hunter; in fact, possibly all of it. The toxins that we get out of that are nitrogen dioxide, nitrogen oxide and ammonia gas. They are the toxins that are then being blasted over the Hunter. There are outcomes from this, so a number of the different portside suburbs are asking for the same outcomes.

The things we want are: to get rid of self-regulation, because it does not work; that all new plants or expansion of existing plans must have a closed loop system to deal with their own pollution; that pollution produced must be remediated; and that no pollution can leave that plant. I know we are talking about air pollution but, just as an aside, Orica have an arsenic plume in the groundwater that they do not know how to fix, and it is slowly wandering off and heading for the Hunter River. No-one knows when it will reach it. That is another example of the problems we deal with. We also want baseline, up-to-date and regular data of cumulative impacts, and actual and allowable pollution levels from related industries must be made available to the public. Cumulative impacts must be taken into account before any new plants are approved. If the cumulative impacts are then deemed too great, there should be no new approvals. Community concerns must be taken into account; that just does not happen these days. Baseline data of cumulative impacts of actual and allowable pollution levels must be made available to the community, and more monitors need to be established to give the authorities, the companies and the community better understanding of when, how often and what pollution we are being exposed to.

CHAIR: Thank you. Mr Hayes.

Mr Hayes: Thank you for inviting us. I have lived in Newcastle for about nine years. When I came here people started talking about PM₁₀. All of the authorities said, 'Oh no. That is impossible. You could not even measure that.' Guess what! Everybody is measuring PM₁₀. Two or three years ago, we started talking about PM_{2.5}. They said, 'Oh no, That is impossible. You could not even measure that.' Guess what we are measuring now! Now we are talking about PM₀ and they are saying, 'Oh, we don't know whether you can measure that.' That is a little bit of history over nine years.

Our association, CPCfM, was formed in 2010. We were concerned then about a development on the port where the old BHP works were. We were worried at that stage about a container terminal with a million containers a year, pretty well all being carried on trucks, so we were worried about more than a million trucks a year coming out on one intersection on Industrial Drive—and that is shown there on your map as well—just near Mayfield West, Mayfield and Mayfield East. That was what we were concerned about. We held a public meeting, and 100 people came along. We held another public meeting, and 200 people came along. Then Orica tried to poison us, so we said, 'We'd better go over and have a look and see what's going on there, because if the wind had been blowing the other way they would have been poisoning us and not the people at Stockton.'

To make a long story short, we got involved in a lot of issues. I was visible. Other issues came up. People said: 'Hayes, what are you doing about this? Hayes, what are you doing about that? What's your group doing about it?' So we are now involved in everything that has planning, consultation, environment, pollution or any of those other words in it. We are involved in the lot. We do, I reckon, about a dozen submissions a month. It is just impossible. Anyway, that is a bit of background about us. We have about 500 members and supporters. Our Mayfield group is one of the 18 groups in the alliance for the Coal Terminal Action Group, so we have taken on

T4 in a big way. You will not be surprised that, when we had a rally here a couple of weeks ago where we had 1,500 people out there on the park, I was the megaphone dude.

We want to talk about enforcements and fines. Fines, in a word, are pathetic—absolutely pathetic. James gave you the example where, if you speed over 100 kilometres an hour, you get booked, you get hit with points. Whatever any of the polluters around here do, if they get pulled up at all, it is a slap-on-the-wrist job. Very, very, very, very, very few breaches go to prosecution. They say on the one hand, 'Look, we haven't got the resources to do all that,' but on the other hand I was at an all-day meeting on Friday last week where the chairman of the EPA, who addressed you earlier today, said, 'Look, we're going to do all these wonderful things, and we haven't got any limitation on our resources.' A few of us questioned him. He said: 'No, it's an important issue. We've got plenty of resources to do all the things that we need to do.' So there is a huge inconsistency between what he says and what his staff say, and there is a huge inconsistency between what he says the department will do and what they actually do.

He has been talking in grand terms about this new dust-stop arrangement they have. You have heard from other witnesses today that they have seen no evidence that it is working. But, if it works, if it works to the letter of the way in which they have exemplified it, the plan is to reduce things by about 20 per cent. But what he does not say in the plan is that there is a new mine approved every week or every month or every six months, or an expansion of an old mine, so the percentage might come down but the gross number is going to go up. So that by itself is not good enough. If you want to stop dust and other pollutants in the air, you have to look at their cause and say: okay, maybe it is time that we said, 'No more coal.' We are not saying close down every coalmine but no more new coal and gradually work towards renewables. They are some of the things.

You have seen our submission. Cathy has given you the outcomes for both the Stockton group and the Mayfield group. Talking locally, it is worth saying that within Mayfield we have two public schools, three private schools, a number of preschools and four aged-care facilities, all within half to one kilometre away from the stockpiles of the coal and the uncovered coal trains as well as the other port-side industries. You have the map in front of you. You can see where Mayfield, Mayfield East, Mayfield West and Mayfield North are, then you have the Hunter River, then you have the stockpiles. But there is one over on the right-hand side which is near what is called Mayfield East. That is actually Carrington. There is another 25 million tonnes going out there.

What you heard today from the witness from the Lake Macquarie council was about the power stations down there. It has just been announced that the coal for those power stations is going to come from Ulan. Ulan is up near Mudgee. Guess where it is going to come? It is going to come down the Hunter Valley. It is going to go through all those closely settled suburbs of Newcastle, including Mayfield, Mayfield East—all those suburbs—then it is going to go out the bottom end and go down the line to there. I do not know how many more millions of tonnes of coal are going to go through there. One of the things we have suggested is a portside rail line—John Sutton is going to talk more about that—to relieve part of the pressure.

We have been talking about diesel: trains, boats, tugs, off-road diesel. Cathy gave you some numbers. I am going to give you some more numbers on diesel, one of which you would have heard this morning. For every tonne of coal that is mined, a litre of diesel is used. We know that at the moment there are about 110 million tonnes of coal going out through the port of Newcastle, so that is 110 million litres of diesel that is burned. It is probably pretty accurate to say that all of that diesel is off road, so it is not subject to any regulation, as you have heard today. We also understand that not only is it not subject to regulation but the diesel itself can be what is called dirty diesel—in other words, it carries a heavy sulfur content that would not allow it to be sold to vehicles that travel on the road. So there is much burning of diesel and much burning of dirty diesel. We have all the ships that come in and out of the harbour, which is a very confined harbour, as well as the tugs. Guess what? There is no restriction on what they can burn. We have asked the EPA about that and they say, 'Oh, it's very hard.' Again, it is dirty diesel, and their bunker oil is even dirtier. So we have those issues.

We heard today that the coal wagons were not covered, and John Sutton is going to give you a photograph later on which is of interest about that. One of the interesting things is that, whilst the coal wagons in Queensland are not covered, in many parts of Queensland they do what is called veneering, which is putting some lacquer on the top. Why do they do that? Do you think it is probably to try and stop the dust coming off? In New South Wales they neither veneer nor cover the wagons—but we haven't got a problem, no; nothing comes off!

CHAIR: I am going to have to do ask you to move it along a little bit so we can get to Mr Sutton and we have time for some questions.

Mr Hayes: I can finish there. We are excited about this. We are passionate about this, as you understand.

CHAIR: I couldn't have picked that up!

Mr Hayes: We really need your help to add that impetus or, somebody might say, a kick up the backside to some of the other regulators so that something better happens than is happening at the moment.

CHAIR: Thank you. Mr Sutton.

Mr Sutton: I echo the thanks to the committee for having this inquiry. My submission is in a private capacity, but I would be bold enough to say that there is nothing in my submission with which any Tighes Hill Community Group member would take issue. It echoes a lot of the discussion that has happened in Tighes Hill over a number of years. I have lived in Tighes Hill for 30 years. I have provided in my submission a couple of maps that provide the local context of Tighes Hill in relation to major coal infrastructure and stockpiles. Despite my Mayfield neighbour's attempt to colonise Tighes Hill on his map, we do exist in that little area there! There are houses in Tighes Hill that are within 200 metres or so of those large stockpiles. A couple of you saw those stockpiles firsthand from the end of a Tighes Hill street and you can attest for yourselves how close they are.

I was a councillor on Newcastle council for two terms in the nineties. In that time I served on the council's environmental protection and pollution advisory committee. That committee does not exist now—that was in the days when local government took a much greater leadership role in these kinds of matters. I was interested to hear the previous testimony from the witness from Lake Macquarie. I think local government has dropped the ball on these matters. In those days, Newcastle council did take a leadership role. They brought the agencies, the community and the industries together to discuss these matters, and significant action came out of that in the nineties. In fact, I have been really surprised, as somebody who to a certain extent has re-engaged a bit more actively recently in these air quality matters, to see just how little progress there has been in that intervening decade. We should have been much more progressed than we are, given some of the innovative work that was done in the nineties.

But I am here to testify that the damaged air quality is both a chronic and an acute problem for the Tighes Hill community, and for other local coal-affected communities, as you have heard. The current trajectories, especially the plans to more than double coal exports through the Port of Newcastle, will simply make an existing problem worse. And all of this is occurring in the absence of rigorous, independent and accessible data and knowledge about things like the extent of dust pollution, especially of fine and ultrafine particulates; doubts about the health implications of this sort of pollution—even doubts about the genuine cost-benefit of the coal industry to Australia. There just is not such a study that has been done that looks at the cost-benefits of the coal industry, in relation to all those sorts of externalities that you have heard about, in terms of health impacts and other impacts on communities of the coal industry.

There is no application of the precautionary principle in our approach to these industries. It is as if the onus is on local communities to somehow prove conclusively that these things do not damage them, rather than on the industries to demonstrate beyond reasonable doubt that they do not do any damage.

I think there is a clear pattern—you have heard it today and you will hear it from me and from many of the submissions that have been lodged. There is a clear crisis of community confidence in the ability of regulatory agencies to establish, monitor and enforce adequate standards for air pollution and air quality. That is an undoubted pattern in much of what you have heard, and it is certainly the experience in Tighes Hill. There is simply no confidence in the self-regulatory systems, and no confidence in the ability of the EPA to protect the community interest in these sorts of matters. And there is just a general lack of adequate action by governments and industry to protect communities, even in simple matters.

John mentioned earlier the covering of coal wagons. Our community has been advocating that for quite a long time. On 16 March 2011, I was driving across the bridge that connects Tighes Hill to Mayfield and crosses the railway line, and I saw what I thought were covered coal wagons. I jumped out. It is a freight rail line; it does not cover passengers at all. I leapt out and thought: 'My gosh! They are finally covering the coal wagons!' I took a photo of it, and I remember sending it to the *Newcastle Herald*. In fact, I think that Matthew Kelly who is here today is the *Herald* journalist I sent it to; he made some inquiries and established that they were actually for ballast. So they do not cover the coal wagons, but somehow they cover ballast. I am not sure what particular impact—

CHAIR: What was the ballast—what material?

Mr Sutton: I do not know exactly what the ballast was. The ballast is for the ships, I guess, and I am not sure what is in it. But, my God, it must be bad if they are covering it! But it shows that they can certainly cover the wagons. If they can do that for ballast, why not for coal?

CHAIR: Can we keep that?

Mr Sutton: Yes, you are welcome keep that; that is a personal photograph that I took on that date.

In addition, we have asked for what are relatively simple infrastructure improvements—there is some expense to them, but they are infrastructure improvements to the freight rail lines that service those coal facilities. We have asked for two things. One is a western freight bypass that will take the coal around in a way that will come down through the north of the line that currently services Kooragang and then will go on, continuing that line, and then down another rail line that we want as a spur line from Sandgate that follows the port on the Mayfield side, that comes down into the Port Waratah facility. That would take all of the coal trains effectively outside of the ambit of the residential areas of Newcastle. The western freight bypass has been supported by groups as diverse as the Hunter chamber of commerce, the Greens, and the local residents' groups. We do not understand why it is not being funded. It should be funded, given the kind of level of community support from those diverse sources that it has. Newcastle council has passed a resolution supporting it; that is right.

The spur line from Sandgate is something that has come up a little bit more recently. It was actually part of a proposal by Nathan Tinkler for a coal loader on the Mayfield site. That coal loader did not proceed—we are thankful about that—but somehow he saw it as a viable thing to have and the port corporation, when it has been suggested to them, have recently said, as part of their port corporation strategy, that they have considered that it is not viable. When we questioned them about that, that was just a kind of a hunch and they have not done any cost-benefit analysis to support that conclusion. In any case, even if it is not viable for the port corporation, it is one of those things that need some whole of government approach, because the community benefit is significant, but they just simply pass the buck from the ARTC to the port corporation and to the coal companies et cetera. Unless there is a whole of government approach to it you never get those kinds of infrastructure improvements. But it does not do much for the confidence of the community in the agencies to have that kind of response which is just dismissive of an initiative that would not just remedy a pollution problem but would actually help the economic diversification of the port as well to have that line. I have made a series of submissions and I will not take up any more time. I have made a series of recommendations in my submission that attempt to address those kinds of points.

I do want to conclude by saying that I come from Tighes Hill. We love our little patch but we also love our little planet. It does not really bring us much joy to see the huge volumes of coal that already go out of the world's largest coal export port and to face the prospect that they are going to double. We know the contribution that that is going to make to climate change. I know Tighes Hill residents, as residents in many other areas of Newcastle are, are really conscious of that contribution, a negative contribution, that our city, through its port, makes to global climate change. That is not something that we are proud of. We want that to stop. You will see lots of community action. There is an annual event where the community in a sense occupies the port in order to re-establish that our community is not happy with that kind of involvement in global climate change. Given most of the information that you have received from local communities about the local impacts of air pollution, we understand that the greatest moral challenge of our generation, according to a former Prime Minister, is also a great air quality challenge and we do not forget about climate change. We are here to talk a lot about local impacts but we are also conscious of that global impact as well. Thanks for that.

CHAIR: Thank you.

Senator DI NATALE: I was very interested in the Coal Terminal Action Group and the experience of that group in doing its own monitoring. Can you perhaps talk me through that process a little bit as to why that was done, what was the process for getting it up and running, and what did it find?

Mr Hayes: Yes. As well as being part of CTAG, I am also a member of the dust and health subcommittee. I am not a technical person on the subcommittee but most of the other people on it are technical. They are engineers or environmentalists or whatever. We were concerned that coaldust was a problem and that formed many of the 500 submissions that were lodged to oppose T4. The Port Waratah Coal Services documents did not acknowledge that. We pressed and eventually the EPA said to the ARTC, who control pretty well all the tracks in New South Wales, 'You do the study and give us the results so we can tell the community what's going on.' It was in the end a very much delayed study. The results were not very good. You have heard other people today talk more authoritatively on the technical side of it but the outcome was that we said, 'Look, that doesn't cut the mustard. We'll do our own.' So we did some crowd funding on Facebook, we came up with eight grand, we hired three machines, we put them in people's backyards that were near the coal terminals and/or the train lines. We had that research analysed by university professors and then we did a launch here and announced our results. Now the EPA have said to the ARTC, 'Well, we told you to go back and do it again. Give us your next lot of results.'

So there is a bit of sword fighting going on between us and the EPA and the ARTC, but we do not think their stuff cuts the mustard and we think the next report will not cut the mustard either. We do not say that ours is the best study that was ever done in the world, but it was not a bad study for \$8,000, which gave us a snapshot of

what is going on. What we know about what is going on is bad, and it confirms our views. All the data and the detail have been given to you in your submissions and will no doubt form part of the Hansard report.

Ms Burgess: I would also like to say that one of the things that we specifically did was to put it close to the source, and we have heard about that quite a bit today—how they like to be further away so they get this average. We did not want the average; we wanted to see what it was like for people that are living close. What we got were quite high exceedences, and that is our concern. I get the impression from some people in the EPA that that has really set them back a little bit, because they were not expecting the kinds of results that we got, but we specifically went to the source. Yes, that meant that we could not say clearly exactly what it was, but we want to know what kind of pollution people are actually exposed to, and that is why we went there.

Mr Sutton: In Tighes Hill, where I live, that came out in that study. Five out of the seven days of the monitoring exceeded the standards, and that was in the street right—

Senator DI NATALE: PM10?

Mr Sutton: PM10, yes—the standards. That was in the street where I live. I guess the simplest illustration I can give of that is this rag, which was a clean rag yesterday before we cleaned windows that were cleaned—I think that one is of two panes. We cleaned a window yesterday, probably after two months of not cleaning it, and that is the kind of result you might get.

Senator DI NATALE: You should tender it!

Mr Sutton: I do not know whether the Senate committee would want to have a rag tendered as evidence. Here is another one.

CHAIR: It would be hard explaining it.

Senator RHIANNON: So are those black smudges from outside the window or inside the house?

Mr Sutton: No, I might say this is from inside the house.

Senator RHIANNON: Inside?

Mr Sutton: This is inside the house.

Senator RHIANNON: Inside the glass?

Mr Sutton: This is not from outside; this is inside. We are not particularly houseproud, but this is about two months accumulation. One of the windows was of two panes and the other was of three panes. It is just the kind of anecdotal, experiential evidence.

CHAIR: That was over summer without any wood fires for heat, I presume.

Ms Burgess: That is right—all those kinds of problems.

Senator DI NATALE: Were the results that the community monitoring got consistent with the monitoring that was done at Stockton in response to the Orica—

Ms Burgess: Yes, the monitoring that we have in Stockton. We did put in that report. Since that report was made, EPA has looked back. We were quite surprised at what we got at Stockton, because that was over our good months, when there are mainly easterlies. As you saw, we are right on the coast, so—unlike for you—the easterly winds mean it is coming from the coast. So what we have since worked out is that we now believe most of those exceedences—I am not sure about all of them, but most of them—are sea salt, which is what we half expect. To be honest, we were really quite confused, because we had 13 exceedences in that time frame. When we expect to get the exceedences in August, with the westerlies. What we really need is a 12-month snapshot, and that will give us a better idea.

Senator DI NATALE: Where are the existing—

Mr Hayes: Just to add to what Cathy is saying, what Stockton misses out on Mayfield gets.

Senator DI NATALE: Yes, it is surrounded.

Mr Hayes: It is not as though it disappears up into the ether somewhere. Somebody is getting it in the neck.

Senator DI NATALE: Yes.

Senator RHIANNON: You speak about a one-stop shop as one of your recommendations. Could you elaborate on how that would work.

Ms Burgess: The problem that you have is that a number of the industries do their own monitoring but we do not get that information.

Senator RHIANNON: They do not release it?

Ms Burgess: They do not release it. When we got our monitor at Stockton, that was all because of Orica, and Orica has paid for that, so it all complies with the EPA. But, because of the NEPM standards and because Stockton is not over 20,000 people, they will not class it under that NEPM standard, even though it complies in every other way with what the EPA wants. Because Stockton as a suburb—and, of course, there are no other suburbs around—does not make up 20,000 people, we will not ever be complying under that regulation and that standard.

Senator DI NATALE: But isn't it part of Newcastle? Isn't it still classified—

Ms Burgess: Yes, but because—over here—

Senator DI NATALE: I get the fact that there is some water around it, but—

Ms Burgess: Yes, and so they class it as just Stockton, you see; that monitor is just doing Stockton.

Mr Hayes: I think there is something else to say about the company monitoring. In fact the EPA have changed their regulations and so now, as a condition of the environmental protection licences that the companies have to monitor, there is now a requirement that they have to put it up on the website. But the difficulty is this: if you have 40 industries, say, all putting it up on the website, it is bloody difficult to find it all. Some of them have funny names and—

Senator RHIANNON: We wanted to ask about this, and I am sorry to interrupt the Chair's time, because the EPA said earlier that there is a wealth of data and it is readily available to the public. So does the industry give the data to the EPA and do they then—

Mr Hayes: No.

Senator RHIANNON: They don't?

Mr Hayes: They are obliged to put it up on their websites and we have said to the EPA—I was at the meeting last week—'Let your website have a compilation of all the company websites so we can go to one spot, hover over it, get them all and then start looking'. But there is one other thing about it: they monitor when they want to, and we have—

Senator RHIANNON: Is the 'they' in that the EPA or the industry?

Mr Hayes: No, the companies.

Senator RHIANNON: Industries, yes.

Mr Hayes: The companies who are obliged, under their licences, to monitor, and that might be once a day, once a week, once a month or once a year depending on what their conditions are. They actually determine what time they turn the monitor on and what time they turn the monitor off. We have anecdotal evidence that when the monitor gets turned off that is when they turn up the engines and everything runs pretty fast after that. So there is a problem, which is what we said in the early part of our submission—that is, self-regulation does not work.

Senator RHIANNON: So with the EPA data, what would you like to change in how it is presented on the website so it is more accessible and usable and you could interpret what was happening?

Mr Sutton: It needs to be real-time data. It needs to be in a format that is immediately understandable by an average person. It is often presented in a highly technical way and often the lag time makes it unusable in any practical way to do anything with it. A one-stop shop too. It is also in my submission, by the way, that recommendation, and it has been a position held by the Tighes Hill group for a long time; we have been advocating it. It also partly intended to stop the buck passing that occurs because when people ring up, they will often get: 'That's a council matter. Ring the company.' In fact, Port Waratah has told residents of Tighes Hill, 'Look, just ring us instead of the EPA.' And, to be perfectly honest, they sometimes get better action out of ringing up the company directly than they do out of the EPA. It is a shemozzle of buck passing, poor data and badly presented data. A one-stop shop would be a mechanism that would at least have one line of accountability that the community could ensure works, rather than just being buck passed around all the different entities.

Mr Hayes: And Barry Buffier told us last Friday, 'We've got plenty of resources.' He did! He said: 'We're rebuilding our website; we're going to do this, that and the other thing. What else would you like on it; we've got plenty of resources.'

Ms Burgess: The other thing to understand is how long this sort of stuff takes on the community. This report was done by a chemical engineer. Not every local group has a chemical engineer or an environmental scientist. In some ways that is the advantage that Newcastle has, I think, over some of those small villages in the upper Hunter. We do have scientists and doctors and people like that because they all live in Newcastle and they can do these sorts of thing. But those smaller places: they might have somebody, but they might not. And if they have

not, then that means that somebody like me, who is a registered nurse, has to learn to understand how to read the data and do all of that. You can imagine how much longer it would take me than a chemical engineer to work all that out. And that is very unfair on the community.

Senator RHIANNON: I want to ask you about the cumulative impacts. You have identified, I think it was in your recommendations or in your general submission, how you think that that can be taken into account. We often hear that it should be, so what does that actually mean for you in making a recommendation?

Mr Hayes: Looking at areas around the port, there is a whole new series of wharves and businesses being considered for approval, in addition to T4. But it is still apparent that the EPA and the other regulators do not get all that data together and add it all up. Another thing that is apparent to us, and it has become very obvious on the T4 issue, is that whilst Health can put in their own submissions in relation to what might happen if something is developed, they do not generate the data; they rely on somebody else to generate the data. So when we had a meeting the other day with the parliamentary secretary for the minister for planning and said, 'Look, this dust report that we have done is different from the one ARTC has done, and we would like to have a meeting with the minister for health about it,' he said, 'No.' He said, 'That's environmental. That goes to Robin Parker.' We said, 'But this is a health—'. He said, 'But Health depends on Environment to tell them what is going on.' So there was buck-passing or, in some cases, cutting off. Which is terrible.

CHAIR: Mr Sutton, did you want to table your rags? It might be useful.

Mr Sutton: If you want to accept them I am very happy to do that. I have a video of the clean rag and the process of doing it, just to attest that that was—

CHAIR: You may want to forward that to us as well so we can put it with the rags.

Mr Hayes: Does that go in the 'rags to riches' box?

CHAIR: That is where we will end. I have tabled a petition on material.

Mr Sutton: I have created history with the first rag ever tabled.

CHAIR: I have tabled a petition on material.

Ms Burgess: Could I not table these—because these are ours and we would like keep them. But we would like to suggest that these two documents would be good documents for you to have a look at and note in the *Hansard*. One is *Point of no return: the massive climate threats we must avoid*—that is Greenpeace and it is about the problems with coal in climate change. From the Climate Commission there is *The critical decade: extreme weather*. Both of them have just been released.

CHAIR: Thank you very much.

CLARKE, Mr Pepe, Chief Executive Officer, Nature Conservation Council of New South Wales

BODSWORTH, Ms Prue, Campaigner, The Wilderness Society Newcastle

BOWSKILL, Ms Nicola, Community Campaigner, The Wilderness Society Newcastle

[15:32]

CHAIR: Welcome. I will throw to you, Ms Bodsworth. You are up.

Ms Bodsworth: Thank you for the opportunity to address the panel today. The Wilderness Society Newcastle has been working on coal seam gas campaigns for two years. Prior to this, in 2010, I did a master's thesis on coal seam gas impacted communities in the Darling Downs. I will be talking about our concerns regarding air quality impacts of coal seam gas on health, and Nicola Bowskill will be talking about our concerns regarding the health risks of coal.

Air pollution is inherent in the current coal seam gas extraction process. In addition to land and water contamination issues, air pollution is emerging as a potential risk to human and environmental health. The fugitive air emissions for coal seam gas wells comprise methane, hydrocarbons, hydrocarbons, hydrogen sulphides and water vapour, and some gas wells produce a condensate that can contain complex hydrocarbons and aromatic hydrocarbons such as benzene, toluene and ethyl xylene, known as BTEX chemicals, known carcinogens. The gas flaring process and glycol dehydrators used to remove water from natural gas can also produce hazardous chemicals, including BTEX.

Literature, including the recent Queensland health department study and a paper from the Colorado School of Public Health, provides examples of where benzene has exceeded guidelines in air-monitoring studies close to gas fields. Both studies conclude that the preliminary results indicate that health effects resulting from air emissions during unconventional gas development warrant further studies.

So there are many communities at risk from the health impacts of coal seam gas, particularly in New South Wales in areas not zoned residential, as the O'Farrell government has recently ruled out coal seam gas drilling within two kilometres of residential areas. Fullerton Cove is not zoned residential; however, there would be over 80 families living within a two-kilometre radius of Dart Energy coal seam gas pilot production wells if Dart chose to pursue this drilling.

There are also many rural communities and individual farm houses who would be forced to live within close proximity to wells. Lower socioeconomic families are at most risk. It was documented by the recent Al Jazeera program that families living in the Tara estate cannot afford to pick up and leave and are now suffering from symptoms including headaches, breathing difficulties, rashes, nosebleeds and nausea, and these are also being investigated by the Queensland department of health.

It is concerning that in New South Wales there has been no coal seam gas health risk assessment. This was raised recently by the South Western Sydney Local Health District, and they have called for a comprehensive assessment of potential risks to human health in relation to coal seam gas drilling in Western Sydney. They stated that the human health risks, especially to people living within a few hundred metres of drilling sites, are unknown.

We consider coal seam gas approvals without this risk assessment, baseline testing, specific air quality guidelines and monitoring to be negligent and reckless, and we are calling for a moratorium on coal seam gas until this study is completed. We encourage the federal government to fund independent research into the health impacts of coal seam gas air pollution and to put in place national standards on coal seam gas pollution with enforced compliance to those standards. Thank you.

Ms Bowskill: Thank you for the opportunity to address you. Speaking about coal, there are a range of well-documented health impacts of coal dust on those who work in the industry or are exposed to coal dust or coal-burning emissions through their lives. These include increased rates of respiratory and cardiovascular hospitalisation, lung cancer and mortality.

Depending on the prevailing wind direction, anyone living or working within close proximity of a coalmine or downwind of a coal-powered plant is at high risk. The impacts of coal dust are not only a matter for the communities of the Hunter but in towns of north-west New South Wales—including Narrabri, Boggabri and Gunnedah—where large coalmines are proposed. Coalminers are also impacted by poor air quality and the health impacts of coal blasting in particular. At the coal blockade camp in Leard State Forest in the state's north-west, there have been five separate reports of an incident that took place on 15 March 2013. Fifteen workers from the Boggabri coalmine were caught in mine-blasting fumes while up a scissor lift. The next-door Tarrawonga coalmine had not alerted Boggabri coalmine or its workers about its blasting plans, and these workers were

hospitalised. Stories such as these go largely unreported and deserve proper investigation. It is clear that the impacts of a coalmine reach further than its geographical footprint, and it is certainly time the federal government addressed these risks in a meaningful way.

Populations at risk are potentially not only limited to humans. Agricultural animals, native fauna and flora living in close proximity to coalmines, coal fired power plants and their associated infrastructure are also exposed to coal dust and pollution. It could be confidently said that any animal exposed to particulate pollution may have their health compromised. A medical article published in 2007, referencing over 50 studies, describes the most common responses to inhaled environmental agents in humans and contrasts them with the responses observed in rats exposed to the same agents:

The small airways in rodents have a different architecture and lack well-defined respiratory bronchioles. Nonetheless, the small airways leading to the acini are similarly affected by exposures to dusts and fumes and the pathologic features are similar to those seen in humans.

Information is not available on if our native animals are affected by particulate pollution. Clearly this is research that needs to be undertaken, particularly for species already under threat or where their habitat is limited to areas that are going to be impacted heavily by surrounding coalmining expansions. The remaining population of the koala, a national icon now listed as a threatened species, may be further stressed by illness caused by particulate pollution. Wildlife corridors and biodiversity offsets adjacent to mining operations may potentially be uninhabitable for the animals they are designated to provide refuge for.

The community impacts of air pollution and coalmining on communities and ecosystems are clearly not being monitored. The three proposed open-cut coalmine developments in Leard forest will produce an estimated 18,000 tonnes of dust per annum that will land on adjoining farms, yet the Planning Assessment Commission, tasked with conducting a merits review of the mines, did not consider the community impacts of all three mines on air quality.

A recent report into the air particulate matter from the Boggabri coalmine in north-west New South Wales showed that the coal company understated its particulate emissions threefold. The environment report prepared by Cumberland Ecology grossly understated the air quality impacts of the development.

Mines should not be expected to self-report upon their expected particulate pollution impacts, self-report on their daily emissions or be relied upon to report on exceedences. To ensure accurate baseline data, human health impacts assessments must be carried out as part of the approval process prior to the development of coalmining projects, and prior assessments also must be conducted on the health of native fauna and flora populations as well.

CHAIR: Thank you. Mr Clarke?

Mr Clarke: Thank you, Madam Chair, and thank you, senators, for the opportunity to appear this afternoon. In particular, I would like to congratulate you on your decision to come here to Newcastle to hear firsthand from people in Newcastle and the Hunter Region about the significant air quality issues in this part of the country.

The Nature Conservation Council represents more than 100 community environment organisations from across the state of New South Wales. I would also like to acknowledge the contributions that our member groups and many other individuals have made to this committee inquiry process to date.

I would like to speak briefly about our regional context here in Newcastle and the Hunter and use this region to illustrate broader failings in the New South Wales planning and pollution control system and to touch briefly on what we see as some of the opportunities for reform and the opportunities for leadership at the national level to improve the situation in relation to air quality and other forms of pollution. By way of context, I think it is useful to reflect on some of the information contained in the EPA's written submission to this inquiry in relation to the sources particularly of particulate pollution for the greater metropolitan region, which includes Newcastle, Sydney and Wollongong, and in particular the upper Hunter. The EPA submission finds that coalmining is the largest source of particulate pollution on a number of indicators in those regions—60 per cent of PM10 particulate matter in the greater metropolitan region—and in the upper Hunter, for industrial emissions, coalmining represents 87.6 per cent of PM10 pollution and 66 per cent of PM2.5.

A lot of the discussion and a lot of the submissions have focused on coalmining, for very sound reasons. Increases in industrial emissions, principally from coalmining, are the key driver of increases in particulate pollution in the upper Hunter. In the case of PM10, that particulate pollution increased by 100 per cent in the period 2003 to 2008 and by more than 100 per cent for PM2.5 in that same reporting period.

Large industrial development, and in particular coalmining and coal fired electricity generation, contribute a disproportionate share of air pollution in the state of New South Wales. As well as the particulate pollution from coalmining operations, coal fired power stations are the largest source of nitrogen oxides and sulfur oxides in

New South Wales. We have conducted an analysis of National Pollutant Inventory data which indicates that the top six point sources of nitrogen oxide pollution in New South Wales are all coal fired power stations, and the top five sources of sulfur oxides are coal fired power stations. The most polluting of those are all state owned. Electricity generation as a sector is the largest source of mercury pollution to air, nitrogen oxide pollution to air and sulfur oxide pollution to the air.

There has been progress in New South Wales and other states and territories on the reduction of many sources of air pollution, particularly point sources, over the last 10 or 20 years, but in New South Wales the government has stopped short on some of our most challenging air pollution issues. Of those, I would highlight coal fired power generation and open-cut coalmining. The projected expansion in open-cut coalmining in the Hunter Valley exposes the weaknesses of the New South Wales planning and pollution control system.

The decision yesterday of the New South Wales Land and Environment Court to overturn approval for an open-cut coalmine near the village of Bulga highlights again the way in which decisions are being made by the Department of Planning and Infrastructure and the Planning Assessment Commission. A negotiated, discretionary approach to air pollution issues prevails and the independent role of the EPA is compromised by changes to the planning legislation introduced by the previous government and perpetuated by the current government.

There are regulatory powers currently available in New South Wales to address these issues but they have not been utilised. Opportunities for reform have been passed over, including the recent strategic regional land-use planning process and, most recently—today—with the release of the New South Wales government's whitepaper on planning-system reform, which again fails to restore the independent role of the EPA in pollution regulation.

We have provided with our submission a series of recommendations to improve the regulation of pollution here in New South Wales. I would be happy to elaborate on those if that is useful. I would also be happy to provide on notice a copy of our law reform report *Clearing the Air*, which looks at opportunities for reform at the New South Wales level. But I think at the federal level it is important to ask, 'What leadership role can the Australian government play in this area?' We would argue, firstly, that the New South Wales government, and likely other state governments, has failed to meet community expectations in terms of managing and reducing, over time, key air pollutant types, particularly particulates.

We believe it is time to initiate a public, national process to review existing national environmental protection measure standards, to introduce a NEPM goal of PM2.5 in line with the lower World Health Organization standard of 20 micrograms per cubic metre, and to enter into an agreement with the states to enact binding regulatory standards, health impact assessment procedures and cumulative impact methodologies along a defined time frame, and, if those time frames are not met, to commit to federal regulatory intervention based on the corporations power in the Constitution, recognising that large industrial point sources contribute disproportionately to many of these issues.

There may also be merit in allocating federal funding for that process and entering into a cooperative approach with the states in the first instance. However, if the states fail to meet those federal standards in a timely manner, it would be appropriate, in our view, for the federal government to intervene in the regulatory role. Thank you.

Senator DI NATALE: Thank you to both of you for your submissions. The coal seam gas issue is an issue which we have not spoken about today. I live outside New South Wales. I understand there is now legislation to prevent new coal seam gas wells within two kays of residential area, but what proportion of existing projects are in residential areas?

Ms Bodsworth: Of the remaining—

Senator DI NATALE: Yes, those already approved.

Ms Bodsworth: Already approved is the Gloucester project. It is in a rural area. However—

Senator DI NATALE: Sorry, I was talking about those projects within two kays of residential properties.

Ms Bodsworth: I would like to take that one on notice, because I have not looked in detail at the Gloucester project and where houses are in relation to that project—whether there are nearby towns or individual farm houses. However, that is important to look at, because that has been approved already. And it was approved without this health study that we are recommending that the New South Wales government do, and which the New South Wales health department recommended for the AGL Energy Sydney project, which was stopped by the two-kilometre buffer zone.

There was pilot production drilling that was approved in Fullerton Cove. Recently, the company suspended their activities. However, it has been approved and they may choose to continue with those operations. And in Fullerton Cove—

Senator DI NATALE: Because the licence was granted prior to the 2k limit.

Ms Bodsworth: Yes, the licence was granted and the pilot production project was actually approved by the government prior to that limit as well. In that case there were over 80 families living within that two-kilometre radius of those pilot production wells but it is not zoned as residential, it is a rural zoning area.

Mr Clarke: If I could elaborate on that, the AGL gas field at Camden in south-west Sydney is the largest existing coal-seam gas field in New South Wales. It has been operating for a number of years. The proposal to expand that to a third stage has been shelved following the introduction of the New South Wales government's new rules. However, the local community in that area has significant concerns about the air quality monitoring and potential health impacts in that area and recently it was reported that AGL was failing to comply with its existing continuous monitoring requirements for air quality. So there continues to be significant debate about the air quality and potential health impacts of the existing operation notwithstanding the recent changes in New South Wales government policy.

Senator DI NATALE: Is the EPA monitoring any of the areas where there are significant coal-seam gas projects?

Mr Clarke: My understanding is that the existing AGL facility at Camden conducts self-monitoring. There are periodic site inspections by the EPA but there is currently no, if you like, regional air monitoring in that area conducted independently by the EPA; it is self-monitoring by the company itself.

Senator DI NATALE: Again it strikes me that the current approach, which is to look at a representative sample of the general population, in other words looking at major population centres, is completely inadequate when it comes to assessing the impact of emissions from coal-seam gas wells. From your submission it is clear that there are a range of substances that would not be tested for anyway, so there would need to be new regime established to monitor some of the specific emissions from coal-seam gas wells. Would that be a fair summary?

Ms Bodsworth: Yes, absolutely. That is why the Sydney health department and we recommend this risk assessment as well which would identify all the possible pollution chemicals involved in the coal-seam gas project as well as likelihood of impact on communities and surrounding areas and then a tailored air monitoring regime for that risk assessment specific to coal-seam gas.

Senator DI NATALE: Is accessing information online easy? Do either of you have experience in accessing information produced by the companies involved?

Mr Clarke: The types of information that are perhaps of most interest to local residents tend to be much more difficult to obtain in terms of frequent or real-time information about pollution and pollution incidence. The longer timescale information, reports of breaches, total amount of pollution over the course of the year and so on, that type of information is more readily accessible but again it is based on a self-reporting framework, so the level and type of detail is highly variable. I would say that on the whole the level and quality of data that is available is not adequate to meet the expectations of local residents.

Senator DI NATALE: So the proposal that we heard earlier about trying to get real-time monitoring through one accessible site, the EPA being the obvious site, would be of benefit to people living in these communities?

Mr Clarke: I think that is right. I expect that we have the technology available to us to efficiently and effectively aggregate this type of data, to monitor on a real-time basis in ways that are not subject to interference by the operators of those facilities. It is a 21st-century and I think we can do a lot better than we have been to date in collecting, aggregating, interpreting and sharing that data with people who have an interest in it, including local residents, health professionals and others.

Senator DI NATALE: I am interested in one of the recommendations that you have put forward, recommendation No. 9, and in particular the suggestion that we could cap the amount of pollutants limited to a particular environment—I imagine a particular zone or airshed is what you are referring to. Can you talk to me about that a little more.

Mr Clarke: Yes. I should clarify that this report and that recommendation do relate to both air and water pollution, and it may be somewhat simpler in some respects to do this with water pollution than with air pollution. But, nonetheless, the logic underpinning this is that every person, wherever they live, has a right to clean, safe air and water. One of the sensible ways that we can aim to achieve that is to identify threshold levels for key pollutants that are safe, or at least safer, and then to implement a regulatory framework that says that for that

particular airshed, or watershed for that matter, exceeding those concentrations or that total volume limit will place human health at risk or pose a threat to the environment, so going beyond that limit should not be permitted from a regulatory perspective. Setting a cap means that, for some pollutants, there may be an opportunity for trading underneath that cap. For other pollutants—highly toxic pollutants in particular—that is likely to be inappropriate; we should simply be seeking to eliminate those pollutants altogether. But for some pollutants it may be useful to set a cap and reduce that cap over time rather than increasing it. So the argument there essentially is that we currently have a piecemeal approach, by and large, to air pollution, where each proposal is considered almost in a vacuum.

Senator DI NATALE: Case by case, yes.

Mr Clarke: Case by case. We do not currently have a line in the sand that says, 'For the Upper Hunter or for the residents of Camberwell or for Newcastle, this is a step too far and we will not approve this.' It responds in some way to concerns raised by industry that say, 'Why should we be the ones that miss out just because we cross that threshold?' We say: 'There is a threshold. If you want to work out a way to increase industrial activity in this area, you need to come forward with a solution for reducing the total pollution load here. So the idea essentially is that industrial activity is constrained by limits that are set to protect human health and the environment.'

Senator DI NATALE: A total limit as opposed to looking at individual thresholds for individual companies, which on their own might be appropriate but in aggregate are obviously a huge concern.

Mr Clarke: That is right.

Senator DI NATALE: When you are talking about trade, just to tease that out a bit more, what things would we be able to trade? I cannot think of any obvious pollutant for which we would accept a high limit in one area and a lower limit in another. Is that what you are referring to?

Mr Clarke: There are examples of trading systems for pollutants such as nitrogen and sulfur oxides. It should be clear that I am not advocating the use of cap and trade systems for pollutants across the board. For many pollutants, the policy goal should be to eliminate them entirely or to reduce them to known safe limits. But there have been successful examples of setting caps, allowing a certain amount of trading underneath those caps and importantly—essentially—reducing those caps over time. We do not currently have that in the New South Wales pollution control system. There are some very limited trials—for salinity in the Hunter River in particular. But the key issue here is setting limits—drawing a line in the sand and saying, 'You shall not proceed beyond here.' We simply do not have that in New South Wales at the moment. We do not have legally binding pollution standards that constrain the discretion of the EPA or the Department of Planning and Infrastructure. Particularly for areas like the Hunter Valley, all of the trends and all of the government policy settings are directed towards continuing increase in pollutants, particularly particulate pollutants.

Senator DI NATALE: Okay. You also point out in recommendation 6:

The EPA's independence in issuing and setting conditions on pollution licences should be reinstated for all classes of development, including major projects.

What does that mean? Under what conditions is the EPA not independent in issuing those licences?

Mr Clarke: In New South Wales under the Environmental Planning and Assessment Act, which is our principal piece of planning legislation, for state-significant development, which includes almost all mining and gas activities, the department of planning is empowered to issue a planning approval. The EPA is then required to issue any pollution licence in a manner that is consistent with the department of planning's decision so, despite the fact that the EPA is the specialist pollution regulator, the department of planning actually makes the decision and then the EPA needs to follow along. So it constrains the EPA's independent decision-making role. I think, as you have heard today, there are plenty of issues with the way that the EPA exercises its various roles but at the planning approval stage one of the key disconnects in the system is that the pollution regulator is not exercising its powers independently. The department of planning is approving developments such as open-cut coalmines and the EPA is then forced to follow along behind.

There is a related issue in that New South Wales Health has no formal decision-making role in the planning system. They have an opportunity to make comment and to their credit some of the branches, the regional offices of New South Wales Health, have been actively involved in some major development proposals. But their input is simply making submissions and they are on a par with other members of the public as they have no formal role in the planning system.

Senator DI NATALE: So perhaps one way of doing that would be through a formal process of health impact assessment?

Mr Clarke: That would certainly be one way of addressing it.

Senator RHIANNON: In both your submissions you talk about health impact assessments so I was interested to see if you could expand on those. I think you both spoke about funding so details on that would be useful and also as to if you saw that as mandatory, something that you were actually recommending should be built into the approval process.

Ms Bowskill: I think we are saying that it should definitely be part of the approval process and it should be mandatory in order to provide accurate baseline data, otherwise it is impossible to tell afterwards what the conditions were before. We were recommending that lung function tests should be carried out and also air pollution ones in order to provide that baseline data. In terms of funding I might have to take that one on notice.

Ms Bodsworth: With coal seam gas the health impacts have definitely been overlooked in the approval process so far, which is concerning. A health impact assessment of a project definitely needs to be incorporated into that process. A lot of the coal seam gas projects are actually being approved under just a review of environmental factors that are not open for public comment at the moment. They are very basic reviews and often they gloss things over and there will not be anything to address the health impacts. So incorporating a health impact assessment into the approval process for coal seam gas is vital. Also to inform that process we are recommending—as has been recommended by the South Western Sydney Local Health District—that there actually be a comprehensive assessment into the potential risks to human health, to inform that process.

Mr Clarke: There is no inherent reason why health impact assessment cannot be done effectively as a part of existing environmental impact assessment documents but our observation is that it largely has not been done particularly effectively. In my personal view I do not think it is material whether you have a separate document or a separate process for health impact assessment or whether there is a consistent requirement or standards and guidelines for health impact assessment within the broader environmental impact assessment process. The important thing is that the work gets done and that the work gets done well and that it gets done by reference to appropriate state and national standards. So whether that is integrated into the existing environmental assessment processes or mandated as a separate parallel process I think is not material but the important issue is that the work gets done. There are a few different scales at which that type of assessment is important. One is at the project scale, another is at the cumulative or regional scale where you are looking at potential cumulative health impacts in an area—that may be, for example, an air shed—and also at state or national level potentially for particular sectors—emerging sectors such as coal seam gas ones—where there is a need for a robust assessment of known and potential health impacts from those industrial sectors. So I do not think it matters too much whether it is within the existing process or is parallel to it, but mandating or requiring health impact assessments would be a very important step forward, and, importantly, imposing consistent guidelines or consistent regulations that set the expectations for how those health impact assessments will be done would be very important.

Senator RHIANNON: You have made a comparison there with environmental impact assessments, and it could even sit within that. Considering that environmental impact assessments have come under quite a bit of criticism for the process; often some of the comments one receives are that they are not too useful. Have you given any consideration to how that could be more independent and more robust and we could be confident that it would reflect the real situation and was not just generating more work for certain people?

Mr Clarke: Health impact assessments would be susceptible to the same problems which have plagued environmental assessments for many years. Ensuring that the data on which conclusions in health impact assessments are being made are publicly available and subject to independent scrutiny, the process for that independent scrutiny and the reasons for decisions are made publicly available and that process is entirely open and transparent would be a first and important step.

Secondly, ensuring that the proponents or consultants who provide that information are subject to significant penalties for knowingly or negligently providing false or misleading information would be important. This is people's health and their lives that we are talking about, and it is appropriate that those individuals are held to the very highest standards.

There have been a range of proposals which we have advanced in the past in relation to environmental assessment, including accreditation schemes for experts who are doing work in this area—environmental assessments or health assessments—and also seeking to break the financial nexus between proponents of development activities and the assessment process itself. One way of doing that is to leave the onus with the proponent to provide the funding but to appoint the relevant experts from a pool of accredited experts. There are a number of models for doing that.

One of the positive pieces of news from the New South Wales planning reforms announced today was penalties for experts—proponents or consultants—who, knowingly or negligently, provide false or misleading information

for the purposes of obtaining planning approval. That is one small step in the right direction, but there is more that needs to be done to ensure the integrity of environmental assessments and health impact assessments in particular.

Senator RHIANNON: In your submission—and, I think, when you were speaking, too—you spoke about the need for the cumulative impacts to be assessed. In your submission, Mr Clarke, on page 3, you say:

... procedures for assessing environmental impacts must require that proponents provide detailed information on cumulative impacts ...

I am very interested in how we gain the information on the cumulative impacts. Can one proponent do that? Could we be confident that they would take other projects into consideration? How thorough would that be?

Mr Clarke: I think that is an important question and a complex area. It may be that requiring the proponent to do that work is not the best way of getting reliable results. If we do, though, look at the proposal to have the proponents do that cumulative impact assessment more effectively, it would require a few things. It would require access to reliable, complete data about the current status of those particular pollutants in that area. But it would also require, importantly, information about trends—upward trends in particular—for key pollutants and other proposals which may contribute to that issue. That has really been one of the critical issues for this region: we have multiple proposals, open-cut coalmining proposals in particular, being advanced in parallel, in ways that compound and actually multiply the nature of the cumulative impacts. It is inherently a difficult area. If the proponents are required to do that work, it is essential that the regulators, whether they are planning consent bodies or the pollution regulators, have the capacity internally to actually assess, interrogate and question those cumulative impact assessment methodologies and also that members of the public have access to the workings and the data so that they can review that independently where necessary.

Senator RHIANNON: I will just go on to your recommendations, which—thank you—are very thorough and very useful. There is a great deal of information there about the EPA. Obviously, when you put forward so many recommendations, it is effectively acknowledging that their work needs to improve. Do you see that a lack of resources is the problem with the EPA, or is it more a cultural thing in terms of how they operate—or a bit of both?

Mr Clarke: I think there are a range of contributing factors. We have not done any detailed analysis of this, so this is merely my impressions. There will always be resource constraints that create challenges in terms of the level and nature of monitoring and enforcement activity that can be undertaken. The EPA is responsible for the regulation of literally thousands of licensed facilities across the state, so resource constraints will always be an issue. But in my view there are also significant cultural issues within the EPA, particularly with those issues that you could describe as being in the too-hard basket.

For pollution issues where there is a relatively low-cost solution and it is possible to negotiate a way through with industry, I think the EPA has achieved significant successes over the last 10 or 20 years. There have been real improvements in many areas. But the areas where the EPA tends to have been least effective are those areas that are genuinely difficult either from a policy perspective or politically. Open-cut coalmines and coal fired power stations are two key cases in point. In relation to other types of pollution—groundwater pollution, for example—it took a very long time and public exposure of its regulatory failure for the EPA to do anything about the groundwater contamination in Botany. So the EPA I think faces some significant cultural challenges and, in particular, challenges in how it deals with those genuinely difficult pollution regulation problems.

One of the things that we have recommended is that the EPA's discretion be constrained, that that discretion to do nothing or to defer the issue be constrained; that they have a legislative duty imposed upon them to reduce and avoid pollution over time; that their responsibilities be very clearly set out; and that they be held accountable to those. There is a great deal of discretion in the existing system both for the EPA and the department of planning, and it is local communities and the environment which pay the cost when that discretion is exercised poorly.

Senator RHIANNON: Thank you; that is very useful. We have heard from a number of frustrated people from communities today, so it helps give some greater understanding. A lot of those recommendations clearly are over time, and cultural change does take a while. I was just wondering if you have also given consideration to some immediate measures with the EPA and some of the things that came up today. Interestingly, this is to do with the EPA providing data. I was wondering if this is something you have given any thought to and would have some advice on. We have heard people say that the EPA say, 'Look, we have all this data; what do you want?' but often they are frustrated with how it is presented. Considering that communities are playing such a critical role in often driving this cultural change, because they are becoming more knowledgeable and are putting pressure on agencies and governments, but information, as we know, is power, and data can be very useful, have you given any thought to the information that the EPA should make available and the form in which it should be made available? You can take that on notice if you want to, because I am just throwing it out there.

Mr Clarke: I think it is an important question. We have not prepared detailed proposals for the nature of information that should be made available and the form that it should be made available in. There are two broad issues here. One is I guess a technical and process issue, and that is around making use of technology to present large amounts of information in ways that are meaningful and accessible and able to be interpreted by people with varying levels of knowledge of these issues. The process of developing those datasets and interfaces should be a consultative one, and I would say that some of the people who are best placed to provide input into the process are those people who have been living with industry on their doorstep for many years and have experienced these interactions firsthand.

I would say secondly, though, that there is a need for a cultural shift. We have significant concerns about the way in which, particularly recently—in just the last few months—the results of some of the New South Wales EPA's monitoring efforts have been presented. The way in which the Upper Hunter Air Quality Monitoring Network results for the first year were presented to the public was deeply disappointing. To know that that network had recorded in excess of 100 breaches, particularly in smaller locations like Camberwell, and to then see the EPA chair telling the public that those national standards had only been exceeded on seven occasions and selectively presenting that information was deeply disappointing. I think it is an indication of the need for a deeper cultural change, one that sees the EPA as a partner with the community rather than a partner with industry.

Senator RHIANNON: Thank you very much, Mr Clarke.

CHAIR: We have reached the end of our time. A couple of you have taken some questions on notice. It would be great if you could get the answers back to us within two weeks.

Thank you to all our witnesses today. To those of you who have attended all day, thank you for your interest. Thank you to our secretariat and to Hansard.

Committee adjourned at 16:17